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Final Report:

Evaluation of Ecological Risk to Avian and Mammalian Receptors in the Vicinity of Upper and Middle Ferry Creek, Stratford, CT

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1. Introduction

This report presents results of an ecological risk assessment for avian and mammalian receptors associated with Ferry Creek and the Housatonic River in Stratford, CT. The Ferry Creek system received wastewater discharges from an industrial manufacturer via runoff from a culvert in upper Ferry Creek as well as from erosion of wetland/fill created from industrial sludge and placed along the creek banks. The scope of this assessment is to address potential CoC-related risks to receptors utilizing habitat in upper Ferry Creek (Area of Concern A1) and Middle Ferry Creek (AoC A3). The spatial delineations of these areas are addressed in the Remedial Investigation report (TtNUS, in prep).

The content of this section draws heavily from the avian assessment performed by NOAA (1998), and retains much of the same approach, content, and general findings as was reported in their study. The present analysis differs from the NOAA investigation in three main ways: 1) additional spatial resolution of the Ferry Creek system is presented; 2) updated exposure parameters for avian modeling have been employed; and 3) an assessment of a semi-aquatic mammal receptor has been added to the evaluation.

Exposure of avian receptors to CoCs depends upon the fate and transport characteristics of the CoCs, distribution of the waste materials throughout the area of concern, and the natural history of the avian indicator species. Avian and mammalian exposure to CoCs within Middle and Upper Ferry Creek and the reference area was evaluated using a food-web modeling approach. Elements of the model (taken from NOAA, 1998) are presented in Section 2. Results of the analysis and discussion of significance including uncertainty are presented in Sections 3, 4, and 5 respectively.

2. Methods

Parameters and assumptions used in the food-web exposure model are derived from natural history information compiled from the literature for each species (Table 2-1). Also, site-specific or regional information for avian receptors was obtained through contracts with local wildlife officials. Specific exposure parameters and the rationale for their selection are discussed in the following sections.

The food-web exposure model was used to estimate the exposure of the receptor species through diet, expressed as a total daily dose. In the literature, most TRVs for terrestrial species are reported as the threshold daily dose to an individual. Estimating a site-specific dose (IR_T) allows for direct comparison of exposure estimates with TRVs. Contaminant body-burden data from the sampling of mummichog, fiddler crabs, and insects, plus water concentrations of CoCs, were used for input into the models. Incidental sediment ingestion was also used as an input variable where appropriate. The basic structure of the exposure model is:

$$\text{Equation 1)} \qquad IR_{Total} = \sum_{X} IR_X = \sum_{X} [\sum_{M} [\frac{(C_{XM} \bullet IR_M) \bullet BF_{XM} \bullet HR}{BW}]]$$

Where:

IR_{TOTAL} = total ingestion rate of all contaminants (mg/kg bw/day wet weight)
IR_X = ingestion rate of contaminant X from all media
C_{XM} = concentration of CoC_X in $medium_M$ (mg/kg wet weight)
IR_M = ingestion rate of $medium_M$ (kg/day wet weight)
BF_{XM} = dietary bioavailability factor of CoC_X in $medium_M$ (percent)
HR = proportion of contaminated site relative to receptor species' home range (i.e., exposure fraction) (unitless)
BW = body weight of receptor species (kg)

Ingestion Rate. Precise information on nutrition requirements and energetics of selected receptor species (heron, blackbirds, and raccoon) were not available from the literature. Instead, daily food and water intake rates have been estimated using an allometric equation based on their body weight in grams (Nagy, 1987). These equations for food ingestion, F, in units of grams dry weight per day (Equations 2, 3, and 4), are as follows:

Red-winged Blackbird:	$FCR = 0.398 \times bw^{0.85}$	Equation 2
Black-crowned night heron	$FCR = 0.648 \times bw^{0.651}$	Equation 3
Raccoon	$FCR = 0.235 \times bw^{0.822}$	Equation 4

In addition, water ingestion, W, in units of liters per day (Equations 5 and 6) were calculated from bw (kg) using the generic models presented below:

Bird Water ingestion	$WIR = 0.059 \times bw^{0.67}$	Equation 5
Mammal Water ingestion	$WIR = 0.099 \times bw^{0.9}$	Equation 6

Data on CoC concentrations in sediment, surface water, and key prey of the receptor species were incorporated into the model to estimate total chemical doses ingested according to their respective intake rates. The daily ingestion intake rates used in the dietary model are presented in Table 2-1, which also details other exposure parameters used in equations above. Average body weights were also used in equations.

To account for ingestion of different food types by a given receptor, the ingestion dose of all prey items, plus sediment and water are summed. Hence, the term ($C_{XM} \times IR_M$) was expanded to specify each ingested medium (Equation 7):

$$\sum(C_{XM} \bullet I_{RM}) = (C_{fish} \bullet I_{fish}) + (C_{crab} \bullet I_{crab}) + (C_{insects} \bullet I_{insects}) + (C_{water} \bullet I_{water}) + (C_{sediment} \bullet I_{sediment})$$

Black-crowned night herons are opportunistic feeders that consume a variety of aquatic species and even small terrestrial mammals. Table 2-2 presents information on the composition of their diet. The fraction of fish, crustaceans, and insects in the black-crowned heron diet are 53%, 21%, and 1.5%, respectively, as reported by NOAA (1998), constituting 75% of total dietary requirements. Hence, ingestion rates of measured prey items were elevated to account for the unsampled items in the heron diet. The remaining 25% of unsampled dietary components was assumed to be as equally contaminated as the 75% for which measurements were available.

To estimate dietary exposure to the black-crowned night heron, samples of crab, fish, and insects were collected from appropriate habitats. Fiddler crabs were collected from all sampling areas, mummichogs were collected from Upper Ferry Creek and a reference area (Great Meadows), and terrestrial insects were collected from Upper Ferry Creek and the reference area (Milford Point).

The diet and feeding behavior of the herons suggests that incidental sediment ingestion does occur and therefore may be a significant exposure pathway (Beyer, pers. comm., 1995; Ohlendorf, pers. comm., 1995). Sediment ingestion was assumed to be equivalent to 5% of the total dietary intake. Also, the herons were estimated to consume 0.05 L of water per day based on their body size (Equation 5). Total concentrations of CoCs in surface water were used to estimate the dose for this component for the food-web model.

As for dietary composition, the NOAA ERA summarized the percent plant and animal matter in red-winged blackbird diets (Table 5-3; NOAA, 1998). During the spring and summer, insects comprise approximately half of the blackbird diet (Martin et al., 1951). Because adults nest during summer and feed their nestlings only insects, this assessment models an exposure diet for the nestlings consisting totally of insects (100%). Because of the preference for terrestrial insects, incidental sediment ingestion does not appear to be a significant component of the CoC exposure pathway for this species. Red-winged blackbirds were estimated to consume 12 g of food per day (dry weight) based on allometric equations using body weight (Equation 2. The dietary water requirements were estimated to be 0.0083 L of water per day based on their body size (Equation 5).

The diet and feeding behavior of raccoons is remarkably similar to that of herons, in that fish, crustaceans and insects are primary foods (U.S. EPA, 1993) and incidental sediment ingestion does occur (Beyer, 1994). Dietary fractions for this species are reported in Table 2-1 and a summary of food consumption parameters are found in Table 2-2.

Bioavailability Factors. To account for differences in bioavailability of CoCs, a dietary bioavailability factor (BF) was applied for particular CoCs to adjust the estimated total daily dose. Dietary studies in which the dose was administered in the food source were targeted. Avian studies cited by Ammerman et al. (1995) found that 44% of copper and only 61% of zinc in plant food sources was absorbed by chickens. Using primarily animal protein sources, bioavailability of copper and zinc in chickens increased to 65% and 85%, respectively. For this assessment, the latter copper value was assumed for heron and blackbirds. For all other CoCs, the maximum assimilation in birds encountered (85%) was assumed for the bioavailability factor (Bf_{XM}). For raccoons, bioavailability was assumed to be 100%.

Home Range. The nearest black-crowned night heron colony is about 3.5 miles (5.6 km) from the Raymark facility. This species has been observed foraging in the tidal areas within 1.9 miles (3 km) of the facility, and along Middle and Upper Ferry Creek. Since information pertaining to home range and feeding territory were not available from the literature, assumptions were made regarding habitat use for the food-web model. Although it is generally accepted that black-crowned night herons defend a feeding territory, no information was available on territory size, making it difficult to arrive at a home-range exposure factor (HR) for the food-web model. With regard to wading birds, the size of the feeding territory depends on the bird's ability to defend it, which is positively correlated with body size. Territory size is also dependent on prey distribution, dictating the size of the area a bird must defend to obtain adequate food in an energy-efficient manner (Kushlan, 1978). Consequently, the feeding territory of herons depends upon the physical conditions of the habitat. Black-crowned night herons will return to the same area to feed (Parsons, pers. comm., 1995). Due to their body size and site fidelity, it was assumed that the birds spent 100% of their time feeding in these areas. Accordingly, a home-range (HR) exposure factor of 1.0 was used in the food-web model.

During the breeding season, red-winged blackbirds maintain territories around their nest that contain at least some of the food supplies for breeding (Oriens, 1987). For this species, breeding territory size is always less than the wetland/marsh it is nesting in. The size of the nesting territory varies depending on the size of the marsh and the density of the red-winged blackbird population (Bent, 1958). Red-winged blackbirds do not stay exclusively within the nesting territory to forage for insects. During the nesting season, most food is obtained from the marsh, although blackbirds also forage in upland areas. Therefore, it was realistic to assume that the red-winged blackbird spends 90% (HR = 0.9) of its time foraging in the areas of interest.

A raccoon's home range is dependant upon its sex and age, habitat, food sources, and the season (Sanderson, 1987). It's most common home range appears to be a few hundred hectares, although values from a few hectares to more than a few thousand hectares have been reported. Winter ranges are smaller than ranges at other times of the year for both male and female raccoons, however, home ranges of males are larger than those of females, while the home range of females with young is restricted. Thus, it was realistic to assume that the raccoon spends up to 100% of its time foraging in area of interest.

Body weight. For body weights of avian receptors, the maximum weight reported in U.S. EPA (1993) was used. For the raccoon, the average adult body weight was used. Both avian and raccoon data represent mean values for both males and females.

Toxicity Reference Values. The literature was reviewed for TRVs for birds and mammals for all CoCs at the Raymark facility. These NOELs and LOELs were obtained from the primary literature, U.S. EPA review documents, and an on-line database (IRIS). Tables 2-3a and 2-3b for birds and raccoons, respectively, presents the TRVs used as benchmarks in the food-web model. These TRVs are expressed as daily doses of contaminants normalized to the body weight of the test species. Values were not available for all CoCs. NOELs were available for many, but not all, CoCs. For mercury, an avian LOEL was used with a one-half extrapolation factor (from U.S. EPA, 1993) to arrive at a NOEL value. For all other LOEL-to-NOEL extrapolation values found that half the ratios are less than a factor of 3 (U.S. EPA, unpubl.). Therefore, the factor of one-tenth used here for all contaminants (except mercury) should be adequately conservative. Data are rarely available for the wildlife species of interest, and most often must be extrapolated from other species (e.g., chicken, mallard). Because of this, the same TRVs were used for both heron and blackbirds; no allometric scaling of the TRVs between heron and blackbird were applied. TRVs for raccoon were also assumed equal to that of the test species (after Sample and Arenal, 1998).

Data treatment. Data were analyzed statistically to arrive at mean and maximum concentrations for each data type (i.e., sediment, fish, crustacean, and insect tissues) for input into the food-web model calculations. Where only one measurement per area was available, the mean and maximum were assumed equal. Also, where measurements were lacking for one Ferry Creek area, data were used as measured in the other Ferry Creek Area.

3. Results

Dietary Component CoC Concentrations. Mean and maximum concentrations of CoCs in the diet of receptor species are summarized by media and sampled area and are presented in Table 3-1 and Table 3-2, respectively. The relevance of these data to lower food chain species were addressed in the NOAA ERA. Here, these exposure data are compared with avian/mammalian TRVs to assess the potential for adverse effects on these receptors.

Black-crowned night heron. The results of the food-web model for black-crowned night heron, expressed as mean and maximum Hazard Quotients (HQs), are presented for Middle and Upper Ferry Creek and the reference station in Tables 3-3 and 3-4. The contribution of each exposure media to the heron diet is shown, with the resulting total dietary dose. This total contaminant dose in the diet was then compared with the TRVs listed in Table 2-3a to calculate HQs for each CoC. HQs for each CoC were then summed and expressed as a Hazard Index (HI) to estimate the risk from the total cumulative dietary exposure.

Doses of Pb to heron based on mean and maximum dietary concentrations calculated for Middle and Upper Ferry Creek resulted in HQs exceeding 1. The mean HQ for Pb were 4.93 and 2.14 (Table 3-3a and 3-3b, respectively), whereas the maximum HQs were 30.1 and 7.3 (Table 3-4a and 3-4b, respectively). Fish consumption accounted for one-third of the total estimated amount of Pb ingested as food (excluding sediment) for Middle and Upper Ferry Creek. Estimated incidental ingestion of sediment in Middle and Upper Ferry Creek accounted for most (>90%) of the total modeled concentration of Pb ingested.

Mean HQs for Zn also approached or slightly exceeded 1 for Middle and Upper Ferry Creek (1.05 and 0.93, respectively) while maximum HQs for these areas were within two-fold of mean values (1.95 and 1.1, respectively). Maximum dose of Cu calculated for Middle Ferry Creek also resulted in a HQ exceeding 1; the value was 2.1, whereas the mean HQ was below one.

The mean HQ for DDT exceeded one only at the reference station with a value of 1.38; maximum HQs for DDT exceeded one at Middle Ferry Creek and at the reference station (3.81 and 1.83, respectively). For PCBs, only the maximum exposure scenario for Middle Ferry Creek resulted in HQs greater than unity (HQ=2.37).

The above assessment estimated the risk associated with each CoC individually. Certain combinations of contaminants are known to have synergistic or antagonistic impacts in concert. In particular, the chlorinated compounds, DDT, PCB, and TCDD, are known to have certain interactions. Thus, a summation of these compounds allows some estimate of potential impact (the Hazard Index, or HI).

The HI for Middle and Upper Ferry Creek for mean dose rates were 8.1 and 4.7, respectively, whereas the HI for these same areas assuming maximum exposure were 42.6 and 13.96, respectively. In contrast, the HI for the reference station for the mean and maximum ingestion rates were 3.82 and 4.46, respectively. The Pb HQ accounted for 45-70% of the HI for Middle and Upper Ferry Creek; for the reference area, the Pb contribution was less than 10%. The second largest contribution was DDT/PCBs; these analytes accounted for 6-10% of the HI value for Ferry Creek stations, whereas DDT was the greatest contributor to the HI for the reference station (41-48%).

In all cases, CoC exposure via ingested sediment is the major contributing pathway for risk to black-crowned night heron. Given that sediment contamination of Middle and Upper Ferry Creek is moderately widespread, and that some of the primary CoC risk drivers have similar environmental behavior (e.g., biomagnification, extreme persistence) and biological impacts (e.g., reproductive impairment), it is possible that these CoCs in combination might have cumulative impacts.

Red-winged black bird. Results of the HQ calculations for the red-winged black bird for Middle and Upper Ferry Creek and the reference area are presented in Table 3-5 and Table 3-6. For this assessment, it was assumed that the entire food diet was insects. Red-winged blackbirds feed their nestlings primarily insects. The total dietary dosage also included water as an exposure route. Assimilation efficiencies of CoCs used were the same as those for the heron: 65% for copper, and 85% for all other CoCs. A home range factor of 90% was incorporated as well.

Due to limited data, assumptions of similarity in prey species concentrations (insects) for both Ferry Creek areas were required. The results of the food-web model for blackbirds indicate only Zn exposure was sufficient to predict possible risk although the Middle/Upper Ferry Creek HQ for Zn (2.21) was lower than the reference station (2.48). Similarly, the HI for Middle and Upper Ferry Creek (5.39) were also lower than the HI for the reference station (6.51).

Raccoon. Results of the food-web model for raccoons are presented for Middle and Upper Ferry Creek and the reference station in Tables 3-7 and 3-8. As for avian receptors, the contribution of each exposure media to the raccoon diet is shown, along with the resulting total dietary dose, benchmarks and HQs under mean and maximum exposure scenarios.

Mean HQs calculated for Middle and Upper Ferry Creek greater than one were observed for two metals (Cu and Pb). The sum of HQs resulted in HIs exceeding 1 for both areas. These metals were by far the largest contributors to overall risk at these areas, accounting for 20-35% of the total risk (HI=4.8 and 2.5, respectively).

Lead. Pb was observed to have HQ values above unity; the mean HQ was 1.7 at Middle Ferry Creek while maximum HQs of 11.5 and 2.5 were observed for Middle and Upper Ferry Creek, respectively. As a contributor to the total risk, this CoC accounted for 36-53% and 25-31% at Middle and Upper Ferry Creek areas, respectively. In contrast to Ferry Creek sites, the reference area HQ for Pb was less than unity.

Copper. The metal Cu also contributed to risk, although to a lesser extent than Pb. The mean HQs for Cu at Middle and Upper Ferry Creek areas were 1.7 and 0.7, respectively; while the maximum HQs were 7.6 and 2.7, respectively. In contrast, HQ values at reference areas were much less than one (0.3-0.4). As a percentage of total risk, Cu contributed between 28-37% of the HI value at Ferry Creek areas. The remaining metals (Cd, Cr, Hg and Zn) were not observed to have HQs exceeding unity under mean and/or maximum exposure scenarios.

PCBs. PCBs in the diet of raccoons were also a potentially relevant source of exposure for raccoons. While mean HQs for PCBs at Middle and Upper Ferry Creek areas were less than one, the maximum HQ for Middle Ferry Creek (4.03) as higher than that observed for the reference area (0.1).

4. Discussion

In this study, potential risk to avian and mammalian receptor species was evaluated using an HQ approach, based on doses derived from a food-web model (HIs in Table 4-1 and Table 4-2). Total daily ingestion by each receptor species and CoC was estimated for Middle and Upper Ferry Creek and the reference area. The total daily dose for each CoC was compared with its TRV to calculate an HQ (total daily dose/TRV). If the HQ exceeded 1, that CoC was considered to pose some level of risk. The magnitude of the HQ provides an approximate, qualitative indication of the potential risk to the receptor. However, the relationship between the HQ ratio and risk may not be linear, and therefore the magnitude of risk is uncertain.

Black-crowned night heron. Exposure of black-crowned night heron was evaluated by considering consumption of fish, crabs, terrestrial insects, and sediment. To estimate dietary exposure, fiddler crabs were collected from all sampling areas while fish and terrestrial insects were collected from Middle and Upper Ferry Creek only. It was assumed that the birds spent 100% of their time feeding at each area (i.e., Middle and Upper Ferry Creek and the reference area), therefore a home range exposure factor of 1 was used in the food-web model.

Results of the food-web model indicated possible adverse effects to the black-crowned night heron. The principal CoC of concern appeared to be Pb where HQ values between 2-30 were observed at Ferry Creek areas while corresponding HQs at the reference area were less than one. About sixty percent of the lead exposure came from sediment; this matrix is incidentally ingested during feeding and accounts for approximately 5% of the herons' dietary ingestion rate. When considering maximum exposure scenarios, Cu and PCBs may also appear to be an important source of incremental exposure; for Middle Ferry Creek the maximum HQ for PCBs (2.37) exceeded unity and were eight-fold greater than the reference area. Thus, it is concluded that Pb, and to a lesser extent, Cu and PCBs are important CoCs contributing to risk to black-crowned night heron in Middle and Upper Ferry Creek.

Red-winged blackbirds. Exposure of red-winged blackbirds was evaluated by considering consumption of terrestrial insects that may have emerged from an aquatic life stage completed in the Middle and Upper Ferry Creek wetlands. Because of a lack of insect data for Upper Ferry Creek and that the species does not consume sediment, the exposures were assumed to be the same. Also assumed was that red-winged blackbirds spend 90% of their time feeding in the wetlands. Only one CoC exhibited an HQ which was marginally above unity (zinc, max HQ = 2.21) and this value was less than risks posed by this CoC at the reference location (max HQ= 2.48) (see Tables 3-5 and 3-6). Thus, based on the results of this assessment, the red-winged blackbird does not appear to be at significant risk of adverse effects from exposure to CoCs from consumption of terrestrial insects present in the wetlands along Middle and Upper Ferry Creek.

Raccoon. Results of the food-web model indicated possible adverse effects to the raccoon. The largest CoC contributor to aggregate risk was Pb in Middle Ferry Creek which exceeded the reference area under the mean exposure scenario. In contrast to Pb, the calculated risks observed for Cu and PCBs were higher than the reference area only under the maximum exposure scenario. Thus, Cu and PCBs may be potentially important CoCs in contributing incremental risk to the raccoon, although to a lesser extent than Pb.

Thus, based on the results of this assessment, the raccoon does appear to be at possible risk of adverse effects from exposure to CoCs while feeding in the Middle and Upper Ferry Creek areas. As observed for heron, Pb, and to a lesser extent, Cu and PCBs are the most important CoCs contributing to incremental risk.

5. Uncertainty

The above assessments were based on conservative assumptions with regard to home range of receptors within the food-web model. Considering that this area is urbanized with houses close to Middle and Upper Ferry Creek, it is probably not a preferred foraging area for herons or raccoons. Also, as there are several other good avian foraging sites near Charles Island, herons may not feed exclusively near the Raymark facility. Considering the magnitude of the HQs, plus the distance from the heron colony and the other feeding grounds within that distance, exposure to CoCs is not likely to pose substantial risk to the herons. Possible risks to raccoon cannot be as easily dismissed. While this species may prefer more urbanized food sources, observed HI values are sufficiently large that even if the AoCs account for 1% of the home range, possible risks are still apparent.

Results of surveys of chemicals in sediments suggest that receptors may be at risk even at reference areas due to high CoC concentrations. The mean Pb exposure to heron at Upper and Middle Ferry Creek AOC's greatly (e.g., ten-fold) exceeded HQs found for Great Meadows. Similarly, for raccoons, only Pb, Cu, and PCBs appear to exhibit risk more than three-fold above mean exposure levels occurring at the reference area.

Very limited data on assimilation efficiency of contaminants were available. In the present study, the maximum value assumed, 85%, was applied to all CoCs (except copper, for which a literature value maximum of 65% was available). Compared with assimilation-efficiency factors reviewed for other taxa (e.g., fish), these assumptions appear to be high and thus may be overly conservative. Assimilation values observed on fish and other taxa area apparently on the order of 55% to 65% for hydrophobic organic contaminants, and lower for super-hydrophobics such as dioxins and some PCBs (Gobas et al., 1988; Barber et al., 1991; Nichols, pers. comm., 1997). Still, TRV values are derived from observed test species responses at measured exposure concentrations such that the CoC-specific bioavailability is inherent in the benchmark.

The true risk to arsenic to raccoons may be overestimated by an order of magnitude since the toxic fraction (i.e., the organic component) is typically about 10% of the total arsenic content (U.S. FDA, 1993). Further, a review of the literature regarding the methodology used to derive the TRV value (extrapolated from mice), reveals that the route of exposure evaluated was arsenic in drinking water. Since arsenic was administered in soluble form it is likely to be far more bioavailable than arsenic bound to sediment particles.

Perhaps the greatest source of uncertainty is the extent of sediment ingestion for the receptors. Black-crowned night heron are opportunistic, general predators; therefore their diet can change dramatically (U.S. EPA, 1995). One study of birds on the coastline indicates a diet of 80% fish with the remainder composed primarily of annelids (chiefly *Nereis virens*), crustaceans, and a few insects. Yet another study in an inland marsh indicates a diet of only 30% fish, composed mostly of young birds (primarily gull chicks), beetles, and other terrestrial prey (U.S. EPA, 1995). Diet is apparently dependent on local availability of prey. These feeding studies are also based on small sample sizes. Factors such as these obviously lead to higher uncertainties in estimates of doses.

There is disagreement among sources referenced about the amount of feeding by red-winged blackbirds in a wetland once nesting has started (90% was assumed). Also, it was assumed that the insects fed to nestlings were the same species and the same relative proportions as those caught by net and analyzed for CoC content. This uncertainty is minor, given that absolute risks to the species appear negligible.

For raccoons, the fact that this species may prefer more urbanized food sources (i.e. garbage) might limit true CoC exposure be at the site. Recalling however, that the raccoon was selected as a surrogate for other aquatic mammals (e.g., shrew, muskrat, otter, mink) that also might inhabit the area, the species particular feeding preferences should not be carelessly used to rule out risks to this receptor group as a whole.

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Table 2-1. Food web exposure parameters for the Raymark Ferry Creek Ecological Risk Assessment.

SPECIES	BODY Weight (g)	DIETARY INTAKE PARAMETERS: Total Food[1] (g/day dry)	ORGANISMS: FISH % Diet[2]	FISH g/day dry[3]	CRUSTACEANS % Diet[2]	CRUSTACEANS g/day dry[3]	INSECTS % Diet[2]	INSECTS g/day dry[3]	Sampled Fraction (%)	INCIDENTAL SEDIMENT %Diet	INCIDENTAL SEDIMENT (g/day dw)	WATER[5] (L/day)	HOME RANGE	BIOAVAILABILITY FACTOR
Red-winged blackbird	54	11.8	0.0%	0.0	0.0%	0.0	50.0%	5.9	50.0%	0.0%	0.00	0.0083	0.9	COC specific
adjusted ration[4]			0.0%	0.0	0.0%	0.0	100.0%	11.8					0.9	
Black-crowned night he	883	53.6	52.5%	28.2	21.0%	11.3	1.5%	0.8	75.0%	5.0%	2.68	0.054	1	COC specific
adjusted ration[4]			70.0%	37.5	28.0%	15.0	2.0%	1.1					1	
Raccoon[3]	6000	299.7	2.3%	6.9	14.3%	42.9	27.3%	81.8	43.9%	9.4%	28.17	0.497	1	COC specific
adjusted ration[4]			5.2%	15.7	32.6%	97.6	62.2%	186.4					1	

na - not applicable.

1- Dry weight dietary requirements derived from body weight-dependent equations of Nagy presented in Section 2.

2- Dietary fractions obtained from literature; see Section 2.

3- Dry weight diet fraction calculated as Total Food requirement x % diet

4- Intake adjusted to obtain full dietary requirement (= [100%/percent sampled fraction] * prey-specific intake)

5- Water intake requirements derived from body weight-dependent equations of Nagy presented in Section 2.

Table 2-2. Percent occurrence of food items in the diet of the raccoon, black-crowned night heron, and the red-winged black bird.

		Food Item				
Animal	Season	Crustacean	Insects	Fish	Other	Reference
Raccoon	Spring	37	40	3	20	Llewellyn and Uhler, 1952
	Summer	8	39	2	51	
	Fall	3	18	trace	79	
	Winter	9	12	2	77	
	Average	14.3	27.3	2.3	56.8	
Night herons	Average	21	1.5	53		NOAA, 1998
Red winged black bird	Average		100			NOAA, 1998

Table 2-3a. Documentation of Toxicity Reference Values used for calculation of risks to black-crowned night heron and the red-winged black bird in the Raymark study area.

Contaminant of Concern	Test Species						Receptor Extrapolation		
	Common Name	BW, kg[1]	Condition Evaluated[2]	Endpoint Value[3]	Endpoint	Reference	Extrapolation Factor[4]	Benchmark NOAEL[5]	TRV[6,7]
Arsenic	mallard	1 00	M	5 14	Chronic NOEL	USFWS 1964	1 00	5.14	5.14
Cadmium	mallard	1 15	R	1 45	Chronic NOEL bounded	White and Finley 1978	1 00	1.45	1 45
Chromium	black duck	1 25	R	1 00	Chronic NOEL	Hasetine et al., unpub.	1 00	1.00	1.00
Copper	chicken	0 53	G,M	28.13	Chronic NOEL bounded	Mehring et al. 1960	1 00	28 13	28.13
Lead	American kestrel	0 13	R	2 05		Paltee 1984	1 00	2.05	2.05
Mercury	mallard	1 00	R	0 06	LOEL unbounded	Heinz et al. 1979	0 50	0.03	0.03
Nickel	mallard	0.78	M,G	77.40	Chronic NOEL bounded	Cain and Pafford 1981	1 00	77.40	77 40
Silver	chickens	0.40	G	12.50	Subchronic NOEL	Hill and Matrone 1970	1 00	12.50	12.50
Zinc	chicken	1 90	M	11.30	Chronic NOEL	Gasaway and Buss 1972	1 00	11.30	11.30
2,3,7,8-TCDD	ringed-neck pheasants	1 00	R	1 40E-05	Chronic NOEL bounded	Noesek et al. 1992	1 00	1.40E-05	1.40E-05
Acenaphthene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Acenaphthylene	mallard	1.30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Anthracene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33 80	33.80
Benz(a)anthracene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Benzo(a)pyrene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Benzo(b)fluoranthene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Chrysene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Dibenz(a,h)anthracene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Fluoranthene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Flourene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
2-Methylnaphthalene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Naphthalene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0 10	33.80	33.80
Phenanthrene	mallard	1 30	M	338	Chronic LOEL	Patton and Dieter 1980	0.10	33.80	33.80
Pyrene	mallard	1.30	M	338	Chronic LOEL	Patton and Dieter 1980	0.10	33.80	33.80
DDT	brown pelican	3.50	R	0.03	Chronic LOEL	EPA 1993	0.10	2.80E-03	2.80E-03
PCBs	pheasant	1 00	R	1.80	Chronic LOEL	EPA 1993	0.10	0.18	0.18

1 - body weight,
2 - M: mortality; R: reproduction; G: growth.
3 - (mg CoC/kg-dw diet/day);
4 - EPA, 1993: LOEL to NOEL factor of two, rather than ten, was used for Hg because the LOEL appeared to be near the threshold for dietary effects.
5 - NOAEL = No Observable Effect Level (mg CoC/kg-RoC/day); NOAEL level for CoC concentration in food (mg CoC/kg diet dry weight): and Benchmark NOAEL * Extrapolation factor.
6 - test species NOAEL= Receptor NOAEL (Sample and Arenal, 1998).
Benchmark NOAEL * (Test species BW/ Receptor of Concern BW).
A) Based on Arochlor 1254 toxicity;
B) assumed to be in the form of sodium arsenite; C) assumed to be in the form of cadmium chloride.
D) assumed to be in the form of Cr(+3); E) assumed to be in the form of copper oxide;
F) assumed to be in the form of metal; G) assumed to be in the form of mercuric chloride;
H) assumed to be in the form of nickel sulfate, I) assumed to be in the form of zinc sulfate.
7 - Data same as NOAEL value; no body weight scaling factor applied.

Table 2-3b. Documentation of Toxicity Reference Values used for calculation of risks to raccoons in the Raymark Study Area.

Contaminant of Concern	RECEPTOR		Test Species Data						Receptor Extrapolation		
	RoC[C]	BW[1] (kg)	Common Name	BW, kg[1]	Condition Evaluated[2]	Endpoint Value[3]	Endpoint	Reference	Extrapolation Factor[4]	Benchmark NOAEL[5]	RoC TRV-DOSE[6]
Arsenic[B]	Raccoon	6.00	Mouse	0.03	R	0.13	Chronic NOAEL	Sample et al. 1996	1.00	0.13	0.13
Cadmium[C]	Raccoon	6.00	Rat	0.35	R	1.00	Chronic NOAEL	Sample et al. 1996	1.00	1.00	1.00
Chromium[D]	Raccoon	6.00	Rat	0.35	G	3.28	Chronic NOAEL	Sample et al. 1996	1.00	3.28	3.28
Copper[E]	Raccoon	6.00	Mink	1.00	R	11.71	Chronic NOAEL	Sample et al. 1996	1.00	11.71	11.71
Lead[F]	Raccoon	6.00	Rat	0.35	R	8.00	Chronic NOAEL	Sample et al. 1996	1.00	8.00	8.00
Mercury[G]	Raccoon	6.00	Rat	0.35	R	0.03	Chronic NOAEL	Sample et al. 1996	1.00	0.03	0.03
Nickel[H]	Raccoon	6.00	Rat	0.35	R	40.00	Chronic NOAEL	Sample et al. 1996	1.00	40.00	40.00
Silver	Raccoon	6.00	Mouse	0.03	G	18.10	125 Day NOAEL	ATSDR 1989a	1.00	18.10	18.10
Zinc	Raccoon	6.00	Rat	0.35	R	160	Chronic NOAEL	Sample et al. 1996	1.00	160	160
2,3,7,8-TCDD	Raccoon	6.00	Rat	0.35	R	1.00E-03	Chronic NOAEL	ATSDR 1997	1.00	1.00E-03	1.00E-03
Acenaphthene	Raccoon	6.00	Mouse	0.35	R	350	13 wk. NOAEL	ATSDR 1993	0.50	175	175
Acenapthylene	Raccoon	6.00	Rat	0.35	M	51.40	10 Day NOAEL	See Acenaphthene	0.50	25.70	25.70
Anthracene	Raccoon	6.00	Mouse	0.35	R	1000	13 wk. NOAEL	ATSDR 1993	0.50	500	500
Benz[a]anthracene	Raccoon	6.00	Mouse	0.03	M	1.50	5 wk. LOAEL	ATSDR 1993	0.30	0.45	0.45
Benzo[a]pyrene[J]	Raccoon	6.00	Mouse	0.03	R	1.00	Chronic NOAEL	Sample et al. 1996	1.00	1.00	1.00
Benzo[b]fluoranthene[K]	Raccoon	6.00									
Chrysene[L]	Raccoon	6.00									
Dibenz[a,h]anthracene	Raccoon	6.00	Rat	0.35	M	15.40	10 Day NOAEL	ATSDR 1993	0.50	7.70	7.70
Fluoranthene[M]	Raccoon	6.00	Rat	0.35	R	500	13 wk. NOAEL	ATSDR 1995	0.10	50.00	50.00
Fluorene	Raccoon	6.00	Mouse	0.35	R	500	13 wk. NOAEL	ATSDR 1993	0.50	250	250
2-Methylnaphthalene	Raccoon	6.00	Dog	12.70	M	1525	Acute ED_{50}	See Naphthalene	0.10	153	153
Naphthalene	Raccoon	6.00	Dog	12.70	M	1525	Acute EC_{50}	ATSDR 1989b	0.10	153	153
Phenanthrene	Raccoon	6.00	Rat	0.35	M	514	10 Day NOAEL	ATSDR 1993	0.50	257	257
Pyrene	Raccoon	6.00	Rat	0.35	M	437	10 Day NOAEL	ATSDR 1993	0.50	219	219
Total PAHs											
DDE	Raccoon	6.00	Mouse	0.03	R	19.00	78 wk. LOAEL	ATSDR 1992	0.50	9.50	9.50
Total Aroclor[A]	Raccoon	6.00	Mink	1.00	R	0.14	Chronic NOAEL	Sample et al. 1996	1.00	0.14	0.14

1 - body weight
2 - M: mortality; R: reproduction; G: growth; C: Carcinogeni
3 - mg CoC/kg
4 - Conversion factor for non-Chronic NOAEL data;
125 Day NOAEL = 1.0 * Chronic NOAEL;
10 Day NOAEL = 0.5 * Chronic NOAEL;
78 Wk LOAEL = 0.5 * Chronic NOAEL
5 Wk LOAEL = 0.3 * Chronic NOAEL; anc
Acute LD_{50}, ED_{50}, EC_{50} = 0.1 * Chronic NOAEL.
5 - NOAEL = No Observable Effect Level (mg CoC/kg-RoC/day); NOAEL level for CoC concentration in food (mg CoC/kg diet dry weight); an
Benchmark NOAEL * Extrapolation factor
6 - test species NOAELx(bw test/bw Roc)1.0 (mean body weight for receptor (adult raccoon) = 6.0 kg, (EPA, 1993)) (after Sample and Arenal, 199
Benchmark NOAEL * (Test species BW/ Receptor of Concern BW)
A) Based on Aroclor 1254 toxicity; Aulerich and Ringer, 1977
B) assumed to be in the form of arsenite: Schroeder and Mitchner, 1971; C) assumed to be in the form of cadmium chloride. Sutou et al., 198
D) assumed to be in the form of Cr(+6); MacKenzie et al., 1958; E) assumed to be in the form of copper sulfate; Aulerich et al., 198
F) assumed to be in the form of lead acetate; Azar et al., 1973; G) assumed to be in the form of methyl mercury chloride: Verschuuren et al., 19
H) assumed to be in the form of nickel sulfate hexahydrate; Ambrose et al., 1976; I) assumed to be in the form of zinc oxide: Schlicker and Cox, 19
J) MacKenzie and Angevine, 1981; K) No Data: McCann and Ames, 1975
L) No Data; McCann and Ames, 1975; M) Kingsbury et al., 1979

Table 3-1a. Mean concentrations of CoCs used as inputs to the food web model for each exposure media.

Fish Tissue Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	2.36	2.36	2.05
	Cadmium	0.36	0.36	0.05
	Chromium	5.95	5.95	7.14
	Copper	50.91	50.91	24.91
	Lead	26.00	26.00	2.09
	Mercury	0.05	0.05	0.06
	Nickel	2.95	2.95	1.64
	Silver	0.10	0.10	0.16
	Zinc	228	228	186
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	5.91	5.91	2.82
PAHs (µg/kg, dry wt)	Acenaphthene	22.73	22.73	11.36
	Acenaphthylene	11.36	11.36	11.36
	Anthracene	36.36	36.36	11.36
	Benz(a)anthracene	127	127	11.36
	Benzo(a)pyrene	209	209	22.73
	Benzo(b)fluoranthene	518	518	31.82
	Chrysene	282	282	11.36
	Dibenz(a,h)anthracene	31.82	31.82	11.36
	Fluoranthene	391	391	11.36
	Fluorene	11.36	11.36	11.36
	2-Methylnaphthalene	11.36	11.36	11.36
	Naphthalene	27.27	27.27	11.36
	Phenanthrene	250	250	11.36
	Pyrene	282	282	11.36
DDTs (µg/kg,dry wt)	DDT	5.68	5.68	136
PCBs (µg/kg, dry wt)	Total Aroclors	500	500	500

Data from NOAA, 1998.

1- Metals data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).

4- Dry weight concentration calculated as Wet weight conc. / (1- % moisture content/100);
fish- 78.7%; crabs- 68%; insects- 48%.

Table 3-1b. Mean concentrations of CoCs used as inputs to the food web model for each exposure media.

Crab Tissue Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	2.44	2.44	5.31
	Cadmium	3.94	3.94	0.28
	Chromium	6.09	6.09	11.65
	Copper	226	226	165
	Lead	49.50	49.50	11.45
	Mercury	0.06	0.06	0.07
	Nickel	10.38	10.38	8.58
	Silver			
	Zinc	85.53	85.53	73.37
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	13.38	13.38	7.16
PAHs (µg/kg, dry wt)	Acenaphthene	7.81	7.81	7.81
	Acenaphthylene	7.81	7.81	7.81
	Anthracene	7.81	7.81	7.81
	Benz(a)anthracene	62.50	62.50	7.81
	Benzo(a)pyrene	93.75	93.75	18.75
	Benzo(b)fluoranthene	103	103	28.13
	Chrysene	96.88	96.88	7.81
	Dibenz(a,h)anthracene	31.25	31.25	7.81
	Fluoranthene	166	166	7.81
	Fluorene	7.81	7.81	7.81
	2-Methylnaphthalene			
	Naphthalene	18.75	18.75	15.63
	Phenanthrene	50.00	50.00	7.81
	Pyrene	169	169	7.81
DDTs (µg/kg,dry wt)	DDT	17.19	17.19	10.94
PCBs (µg/kg, dry wt)	Total Aroclors	1019	1019	188

Data from NOAA, 1998

1- Data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).

Table 3-1c. Mean concentrations of CoCs used as inputs to the food web model for each exposure media.

Insect Tissue Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	0.46	0.46	0.48
	Cadmium	1.81	1.81	1.46
	Chromium	2.00	2.00	3.33
	Copper	53.85	53.85	57.10
	Lead	4.27	4.27	13.85
	Mercury	0.04	0.04	0.03
	Nickel	1.73	1.73	1.50
	Silver			
	Zinc	149	149	167
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	4.29	4.29	2.65
PAHs (µg/kg, dry wt)	Acenaphthene	19.23	19.23	19.23
	Acenaphthylene	19.23	19.23	19.23
	Anthracene	19.23	19.23	19.23
	Benz(a)anthracene	96.15	96.15	96.15
	Benzo(a)pyrene	96.15	96.15	96.15
	Benzo(b)fluoranthene	96.15	96.15	96.15
	Chrysene	96.15	96.15	96.15
	Dibenz(a,h)anthracene	96.15	96.15	96.15
	Fluoranthene	19.23	19.23	19.23
	Fluorene			
	2-Methylnaphthalene			
	Naphthalene	19.23	19.23	19.23
	Phenanthrene	50.00	50.00	90.38
	Pyrene	19.23	19.23	19.23
DDTs (µg/kg,dry wt)	DDT	23.08	23.08	23.08
PCBs (µg/kg, dry wt)	Total Aroclors	331	331	269

Data from NOAA, 1998

1- Data for Upper Ferry Creek (A1) not available; assumed to be the same as measured Middle Ferry Creek (A3).

Table 3-1d. Mean concentrations of CoCs used as inputs to the food web model for each exposure media.

Sediment Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	8.00	5.86	7.41
	Cadmium	6.23	4.06	0.31
	Chromium	154	157	60.75
	Copper	4038	947	161
	Lead	3270	1056	71.83
	Mercury	0.45	0.45	0.62
	Nickel	129	50.24	20.45
	Silver	0.68	1.08	0.53
	Zinc	881	342	134
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	2.21	2.55	0.02
PAHs (µg/kg, dry wt)	Acenaphthene	1394	303	615
	Acenaphthylene	1361	516	615
	Anthracene	1371	468	578
	Benz(a)anthracene	2362	1497	2015
	Benzo(a)pyrene	2131	1353	1703
	Benzo(b)fluoranthene	4108	3004	3291
	Chrysene	2952	1900	1938
	Dibenz(a,h)anthracene	1412	404	753
	Fluoranthene	5628	3664	3771
	Fluorene	987	337	615
	2-Methylnaphthalene	1416	557	615
	Naphthalene	1024	526	615
	Phenanthrene	2243	1592	1900
	Pyrene	5110	2882	2486
DDTs (µg/kg,dry wt)	DDT	14.34	6.57	1.98
PCBs (µg/kg, dry wt)	Total Aroclors	15862	2620	84.56

Data from TtNUS (1998).

Table 3-1e. Mean concentrations of CoCs used as inputs to the food web model for each exposure media.

Surface Water Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (µg/L)	Arsenic	21.60	21.60	12.80
	Cadmium	1.20	1.20	0.96
	Chromium	12.40	12.40	5.33
	Copper	121	121	20.00
	Lead	13.70	13.70	4.29
	Mercury	0.55	0.55	0.16
	Nickel	11.70	11.70	4.54
	Silver	1.70	1.70	5.58
	Zinc	127	127	29.62
Dioxins (ng/L)	2,3,7,8-TCDD			
PAHs (µg/L)	Acephthene	5.00	5.00	5.00
	Acephthylene	5.00	5.00	5.00
	Anthracene	5.00	5.00	5.00
	Benz(a)anthracene	5.00	5.00	5.00
	Benzo(a)pyrene	5.00	5.00	5.00
	Benzo(b)fluoranthene	5.00	5.00	5.00
	Chrysene	5.00	5.00	5.00
	Dibenz(a,h)anthracene	5.00	5.00	5.00
	Fluoranthene	5.00	5.00	5.00
	Fluorene	5.00	5.00	5.00
	2-Methylphthalene	5.00	5.00	5.00
	Phthalene	5.00	5.00	5.00
	Phenanthrene	5.00	5.00	5.00
	Pyrene	5.00	5.00	5.00
DDTs (µg/L)	DDT	0.10	0.10	0.12
PCBs (µg/L)	Total Aroclors	2.10	2.10	1.69

Data from NOAA, 1998.

1- Data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).

Table 3-2a. Maximum concentrations of CoCs used as inputs to the food web model for each exposure media.

Fish Tissue Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	2.50	2.50	2.18
	Cadmium	0.64	0.64	0.08
	Chromium	10.55	10.55	10.14
	Copper	74.82	74.82	31.00
	Lead	53.77	53.77	2.91
	Mercury	0.07	0.07	0.07
	Nickel	4.86	4.86	2.05
	Silver	0.12	0.12	0.16
	Zinc	259	259	195
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	8.64	8.64	3.06
PAHs (µg/kg, dry wt)	Acenaphthene	6.45	22.73	11.36
	Acenaphthylene	22.73	11.36	11.36
	Anthracene	11.36	36.36	11.36
	Benz(a)anthracene	36.36	127	11.36
	Benzo(a)pyrene	127	209	22.73
	Benzo(b)fluoranthene	209	518	31.82
	Chrysene	518	282	11.36
	Dibenz(a,h)anthracene	282	31.82	11.36
	Fluoranthene	31.82	391	11.36
	Fluorene	391	11.36	11.36
	2-Methylnaphthalene	11.36	11.36	11.36
	Naphthalene	11.36	27.27	11.36
	Phenanthrene	27.27	250	11.36
	Pyrene	250	282	11.36
DDTs (µg/kg,dry wt)	DDT	282	50.45	136
PCBs (µg/kg, dry wt)	Total Aroclors	1759	1759	1759

Data from NOAA, 1998.
1- Data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).
2- Only one data point available max. values assumed = mean.

Table 3-2b. Maximum concentrations of CoCs used as inputs to the food web model for each exposure media.

Crab Tissue Data[1,2]

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	2.44	2.44	5.31
	Cadmium	3.94	3.94	0.28
	Chromium	6.09	6.09	11.65
	Copper	226	226	165
	Lead	49.50	49.50	11.45
	Mercury	0.06	0.06	0.07
	Nickel	10.38	10.38	8.58
	Silver			
	Zinc	13.38	13.38	7.16
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	13.38	13.38	7.16
PAHs (µg/kg, dry wt)	Acenaphthene	7.81	7.81	7.81
	Acenaphthylene	7.81	7.81	7.81
	Anthracene	7.81	7.81	7.81
	Benz(a)anthracene	62.50	62.50	7.81
	Benzo(a)pyrene	93.75	93.75	18.75
	Benzo(b)fluoranthene	103	103	28.13
	Chrysene	96.88	96.88	7.81
	Dibenz(a,h)anthracene	31.25	31.25	7.81
	Fluoranthene	166	166	7.81
	Fluorene	7.81	7.81	7.81
	2-Methylnaphthalene			
	Naphthalene	18.75	18.75	15.63
	Phenanthrene	50.00	50.00	7.81
	Pyrene	169	169	7.81
DDTs (µg/kg,dry wt)	DDT	17.19	17.19	10.94
PCBs (µg/kg, dry wt)	Total Aroclors	1019	1019	188

Data from NOAA, 1998.

1- Data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).

2- Only one data point available max. values assumed = mean.

Table 3-2c. Maximum concentrations of CoCs used as inputs to the food web model for each exposure media.

Insect Tissue Data (dry wt.)

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1]	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	0.46	0.46	0.48
	Cadmium	1.81	1.81	1.46
	Chromium	2.00	2.00	3.33
	Copper	53.85	53.85	57.10
	Lead	4.27	4.27	13.85
	Mercury	0.04	0.04	0.03
	Nickel	1.73	1.73	1.50
	Silver			
	Zinc	149	149	167
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	4.29	4.29	2.65
PAHs (µg/kg, dry wt)	Acenaphthene	19.23	19.23	19.23
	Acenaphthylene	19.23	19.23	19.23
	Anthracene	19.23	19.23	19.23
	Benz(a)anthracene	96.15	96.15	96.15
	Benzo(a)pyrene	96.15	96.15	96.15
	Benzo(b)fluoranthene	96.15	96.15	96.15
	Chrysene	96.15	96.15	96.15
	Dibenz(a,h)anthracene	96.15	96.15	96.15
	Fluoranthene	19.23	19.23	19.23
	Fluorene			
	2-Methylnaphthalene			
	Naphthalene	19.23	19.23	19.23
	Phenanthrene	50.00	50.00	90.38
	Pyrene	19.23	19.23	19.23
DDTs (µg/kg,dry wt)	DDT	23.08	23.08	23.08
PCBs (µg/kg, dry wt)	Total Aroclors	331	331	269

Data from NOAA, 1998.

1- Data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).

2- Only one data point available max. values assumed = mean.

Table 3-2d. Maximum concentrations of CoCs used as inputs to the food web model for each exposure media.

Sediment Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)	Reference (GM)
Inorganics (mg/kg, dry wt)	Arsenic	19.10	13.10	14.20
	Cadmium	22.50	18.50	0.33
	Chromium	501	900	107.00
	Copper	21000	6780	336.00
	Lead	22900	4790	141.00
	Mercury	1.70	3.10	1.20
	Nickel	427	162	33.90
	Silver	1.50	3.20	0.65
	Zinc	4800	1040	192.00
Dioxins (ng/kg, dry wt)	2,3,7,8-TCDD	16.79	2.55	0.02
PAHs (µg/kg, dry wt)	Acenaphthene	8500	800	1450.00
	Acenaphthylene	8500	1500	1450.00
	Anthracene	8500	1100	1300.00
	Benz(a)anthracene	5000	3200	7000.00
	Benzo(a)pyrene	6100	3200	5800.00
	Benzo(b)fluoranthene	9900	7300	12000.00
	Chrysene	6900	3900	6700.00
	Dibenz(a,h)anthracene	8500	730	2000.00
	Fluoranthene	12000	8000	14000.00
	Fluorene	4450	800	1450.00
	2-Methylnaphthalene	8500	1700	1450.00
	Naphthalene	4450	1700	1450.00
	Phenanthrene	5500	4200	6700.00
	Pyrene	11000	6600	9300.00
DDTs (µg/kg,dry wt)	DDT	80.00	15.00	4.4
PCBs (µg/kg, dry wt)	Total Aroclors	134500	11765	90

Data from TtNUS (1998).

Table 3-2e. Maximum concentrations of CoCs used as inputs to the food web model for each exposure media.

Surface Water Data

		Middle Ferry Creek (A3)	Upper Ferry Creek (A1)[1,2]	Reference (GM)
Inorganics (µg/L)	Arsenic	21.60	21.60	33.00
	Cadmium	1.20	1.20	1.00
	Chromium	12.40	12.40	22.30
	Copper	121	121	51.80
	Lead	13.70	13.70	21.00
	Mercury	0.55	0.55	0.49
	Nickel	11.70	11.70	5.00
	Silver	1.70	1.70	18.00
	Zinc	127	127	63.00
Dioxins (ng/L)	2,3,7,8-TCDD	0.00E+00	0.00E+00	0.00E+00
PAHs (µg/L)	Acephthene	5.00	5.00	5.00
	Acephthylene	5.00	5.00	5.00
	Anthracene	5.00	5.00	5.00
	Benz(a)anthracene	5.00	5.00	5.00
	Benzo(a)pyrene	5.00	5.00	5.00
	Benzo(b)fluoranthene	5.00	5.00	5.00
	Chrysene	5.00	5.00	5.00
	Dibenz(a,h)anthracene	5.00	5.00	5.00
	Fluoranthene	5.00	5.00	5.00
	Flourene	5.00	5.00	5.00
	2-Methylphthalene	5.00	5.00	5.00
	phthalene	5.00	5.00	5.00
	Phenthrene	5.00	5.00	5.00
	Pyrene	5.00	5.00	5.00
DDTs (µg/L)	DDT	0.10	0.10	0.25
PCBs (µg/L)	Total Aroclors	2.10	2.10	2.50

Data from NOAA, 1998.
1- Data for Upper Ferry Creek (A1) not available;
assumed to be the same as measured in Middle Ferry Creek (A3).
2- Only one data point available max. values assumed = mean.

Table 3-3a. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the black-crowned night heron.

Middle Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day)					Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
		Fish	Crab	Insects	Sediment	Water				
Inorganics	Arsenic	88.7	36.6	0.5	21.5	1.17E-03	125.2	141.8	5.14	0.03
	Cadmium	13.7	59.1	1.9	16.7	6.51E-05	77.7	88.0	1.45	0.06
	Chromium	223.5	91.5	2.1	413.4	6.73E-04	621.0	703.3	1.00	0.70
	Copper	1911.1	3389.4	57.8	10827.7	6.57E-03	13758.1	15581.1	28.13	0.55
	Lead	976.0	743.3	4.6	8767.2	7.44E-04	8917.5	10099.0	2.05	[illegible]
	Mercury	2.0	0.9	0.0	1.2	2.99E-05	3.6	4.1	0.03	0.13
	Nickel	110.9	155.8	1.9	346.1	6.35E-04	522.5	591.7	77.4	7.64E-03
	Silver	3.8			1.8	9.23E-05	4.7	5.4	12.5	4.30E-04
	Zinc	8548.9	1284.3	160.1	2361.3	6.89E-03	10501.4	11892.9	11.30	1.05
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		3.7E-04	4.2E-04	1.40E-05	0.03
PAHs	Acenaphthene	0.9	0.1	0.0	3.7	2.71E-04	4.0	4.6	33.80	1.35E-04
	Acenaphthylene	0.4	0.1	0.0	3.7	2.71E-04	3.6	4.1	33.8	1.20E-04
	Anthracene	1.4	0.1	0.0	3.7	2.71E-04	4.4	5.0	33.80	1.48E-04
	Benz(a)anthracene	4.8	0.9	0.1	6.3	2.71E-04	10.3	11.7	33.80	3.46E-04
	Benzo(a)pyrene	7.8	1.4	0.1	5.7	2.71E-04	12.8	14.5	33.80	4.29E-04
	Benzo(b)fluoranthene	19.5	1.5	0.1	11.0	2.71E-04	27.3	30.9	33.80	9.15E-04
	Chrysene	10.6	1.5	0.1	7.9	2.71E-04	17.0	19.3	33.80	5.71E-04
	Dibenz(a,h)anthracene	1.2	0.5	0.1	3.8	2.71E-04	4.7	5.3	33.80	1.58E-04
	Fluoranthene	14.7	2.5	0.0	15.1	2.71E-04	27.4	31.1	33.80	9.19E-04
	Fluorene	0.4	0.1		2.6	2.71E-04	2.7	3.1	33.80	9.09E-05
	2-Methylnaphthalene	0.4			3.8	2.71E-04	3.6	4.1	33.80	1.20E-04
	Naphthalene	1.0	0.3	0.0	2.7	2.71E-04	3.5	3.9	33.80	1.16E-04
	Phenanthrene	9.4	0.8	0.1	6.0	2.71E-04	13.8	15.6	33.8	4.62E-04
	Pyrene	10.6	2.5	0.0	13.7	2.71E-04	22.8	25.8	33.80	7.64E-04
	Sum PAHs	83.0	12.3	0.7	89.8	3.80E-03	158.0	178.9		5.29E-03
DDTs	DDT	0.2	0.3	0.0	0.0	5.65E-06	0.5	0.5	2.80E-03	0.18
PCBs	Total Aroclors	18.8	15.3	0.4	42.5	1.14E-04	65.4	74.1	0.18	0.41
									Hazard Index	8.09

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 0.883 kg assumed, see text.

Table 3-3b. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the black-crowned night heron.

Upper Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	88.7	36.6	0.5	15.7	1.17E-03	120.3	136.2	5.14	0.03
	Cadmium	13.7	59.1	1.9	10.9	6.51E-05	72.8	82.4	1.45	0.06
	Chromium	223.5	91.5	2.1	420.7	6.73E-04	627.2	710.3	1.00	0.71
	Copper	1911.1	3389.4	57.8	2539.8	6.57E-03	6713.3	7602.9	28.13	0.27
	Lead	976.0	743.3	4.6	2831.3	7.44E-04	3871.9	4385.0	2.05	2.14
	Mercury	2.0	0.9	0.0	1.2	2.99E-05	3.6	4.1	0.03	0.13
	Nickel	110.9	155.8	1.9	134.7	6.35E-04	342.8	388.2	77.4	5.02E-03
	Silver	3.8			2.9	9.23E-05	5.7	6.4	12.5	5.13E-04
	Zinc	8548.9	1284.3	160.1	918.1	6.89E-03	9274.6	10503.6	11.30	0.93
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		3.7E-04	4.2E-04	1.40E-05	0.03
PAHs	Acenaphthene	0.9	0.1	0.0	0.8	2.71E-04	1.5	1.7	33.80	5.14E-05
	Acenaphthylene	0.4	0.1	0.0	1.4	2.71E-04	1.7	1.9	33.8	5.55E-05
	Anthracene	1.4	0.1	0.0	1.3	2.71E-04	2.3	2.7	33.80	7.85E-05
	Benz(a)anthracene	4.8	0.9	0.1	4.0	2.71E-04	8.4	9.5	33.80	2.80E-04
	Benzo(a)pyrene	7.8	1.4	0.1	3.6	2.71E-04	11.0	12.5	33.80	3.70E-04
	Benzo(b)fluoranthene	19.5	1.5	0.1	8.1	2.71E-04	24.8	28.1	33.80	8.30E-04
	Chrysene	10.6	1.5	0.1	5.1	2.71E-04	14.6	16.6	33.80	4.91E-04
	Dibenz(a,h)anthracene	1.2	0.5	0.1	1.1	2.71E-04	2.4	2.7	33.80	8.12E-05
	Fluoranthene	14.7	2.5	0.0	9.8	2.71E-04	23.0	26.0	33.80	7.69E-04
	Fluorene	0.4	0.1		0.9	2.71E-04	1.2	1.4	33.80	4.12E-05
	2-Methylnaphthalene	0.4			1.5	2.71E-04	1.6	1.8	33.80	5.47E-05
	Naphthalene	1.0	0.3	0.0	1.4	2.71E-04	2.3	2.6	33.80	7.80E-05
	Phenanthrene	9.4	0.8	0.1	4.3	2.71E-04	12.3	13.9	33.8	4.12E-04
	Pyrene	10.6	2.5	0.0	7.7	2.71E-04	17.7	20.1	33.80	5.94E-04
	Sum PAHs	83.0	12.3	0.7	51.0	3.80E-03	125.0	141.5		4.19E-03
DDTs	DDT	0.2	0.3	0.0	0.0	5.65E-06	0.4	0.5	2.80E-03	0.18
PCBs	Total Aroclors	18.8	15.3	0.4	7.0	1.14E-04	35.2	39.9	0.18	0.22
									Hazard Index	4.70

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 0.883 kg assumed, see text.

Table 3-3c. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the black-crowned night heron.

Great Meadows

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	76.8	79.8	0.5	19.9	6.95E-04	150.4	170.4	5.14	0.03
	Cadmium	1.7	4.1	1.6	0.8	5.20E-05	7.0	7.9	1.45	5.47E-03
	Chromium	267.9	174.9	3.6	162.9	2.89E-04	517.9	586.5	1.00	0.59
	Copper	935.1	2470.5	61.2	431.0	1.09E-03	3313.1	3752.1	28.13	0.13
	Lead	78.5	171.9	14.9	192.6	2.33E-04	389.1	440.7	2.05	0.21
	Mercury	2.2	1.1	0.0	1.7	8.45E-06	4.2	4.8	0.03	0.15
	Nickel	61.4	128.9	1.6	54.8	2.47E-04	209.8	237.5	77.4	3.07E-03
	Silver	6.0			1.4	3.03E-04	6.3	7.1	12.5	5.69E-04
	Zinc	6979.0	1101.7	179.6	360.0	1.61E-03	7327.3	8298.2	11.30	0.73
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		1.8E-04	2.1E-04	1.40E-05	0.01
PAHs	Acenaphthene	0.4	0.1	0.0	1.6	2.71E-04	1.9	2.1	33.80	6.31E-05
	Acenaphthylene	0.4	0.1	0.0	1.6	2.71E-04	1.9	2.1	33.8	6.31E-05
	Anthracene	0.4	0.1	0.0	1.5	2.71E-04	1.8	2.0	33.80	6.02E-05
	Benz(a)anthracene	0.4	0.1	0.1	5.4	2.71E-04	5.1	5.8	33.80	1.72E-04
	Benzo(a)pyrene	0.9	0.3	0.1	4.6	2.71E-04	4.9	5.6	33.80	1.65E-04
	Benzo(b)fluoranthene	1.2	0.4	0.1	8.8	2.71E-04	9.0	10.2	33.80	3.00E-04
	Chrysene	0.4	0.1	0.1	5.2	2.71E-04	5.0	5.6	33.80	1.66E-04
	Dibenz(a,h)anthracene	0.4	0.1	0.1	2.0	2.71E-04	2.3	2.6	33.80	7.59E-05
	Fluoranthene	0.4	0.1	0.0	10.1	2.71E-04	9.1	10.3	33.80	3.04E-04
	Fluorene	0.4	0.1		1.6	2.71E-04	1.9	2.1	33.80	6.25E-05
	2-Methylnaphthalene	0.4			1.6	2.71E-04	1.8	2.0	33.80	5.91E-05
	Naphthalene	0.4	0.2	0.0	1.6	2.71E-04	2.0	2.2	33.80	6.64E-05
	Phenanthrene	0.4	0.1	0.1	5.1	2.71E-04	4.9	5.5	33.8	1.63E-04
	Pyrene	0.4	0.1	0.0	6.7	2.71E-04	6.1	7.0	33.80	2.06E-04
	Sum PAHs	7.2	2.1	0.7	57.7	3.80E-03	57.5	65.2		1.93E-03
DDTs	DDT	5.1	0.2	0.0	0.0	6.59E-06	4.5	5.1	2.80E-03	1.83
PCBs	Total Aroclors	18.8	2.8	0.3	0.2	9.20E-05	18.8	21.3	0.18	0.12
									Hazard Index	3.82

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 0.883 kg assumed, see text.

Table 3-4a. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the black-crowned night heron.

Middle Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	93.8	36.6	0.5	51.2	1.17E-03	154.8	175.4	5.14	0.03
	Cadmium	23.9	59.1	1.9	60.3	6.51E-05	123.5	139.9	1.45	0.10
	Chromium	395.9	91.5	2.1	1343.4	6.73E-04	1558.0	1764.4	1.00	1.76
	Copper	2808.7	3389.4	57.8	56309.9	6.57E-03	53180.9	60227.5	28.13	2.14
	Lead	2018.6	743.3	4.6	61404.6	7.44E-04	54545.4	61772.9	2.05	30.13
	Mercury	2.6	0.9	0.0	4.6	2.99E-05	6.9	7.8	0.03	0.24
	Nickel	182.6	155.8	1.9	1145.0	6.35E-04	1262.4	1429.7	77.4	0.02
	Silver	4.4			4.0	9.23E-05	7.2	8.1	12.5	6.51E-04
	Zinc	9704.1	200.8	160.1	12870.8	6.89E-03	19495.4	22078.6	11.30	1.95
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	4.9E-04	5.5E-04	1.40E-05	0.04
PAHs	Acenaphthene	0.2	0.1	0.0	22.8	2.71E-04	19.7	22.3	33.80	6.60E-04
	Acenaphthylene	0.9	0.1	0.0	22.8	2.71E-04	20.2	22.9	33.8	6.77E-04
	Anthracene	0.4	0.1	0.0	22.8	2.71E-04	19.9	22.5	33.80	6.65E-04
	Benz(a)anthracene	1.4	0.9	0.1	13.4	2.71E-04	13.4	15.2	33.80	4.50E-04
	Benzo(a)pyrene	4.8	1.4	0.1	16.4	2.71E-04	19.2	21.8	33.80	6.45E-04
	Benzo(b)fluoranthene	7.8	1.5	0.1	26.5	2.71E-04	30.6	34.7	33.80	1.03E-03
	Chrysene	19.5	1.5	0.1	18.5	2.71E-04	33.6	38.0	33.80	1.13E-03
	Dibenz(a,h)anthracene	10.6	0.5	0.1	22.8	2.71E-04	28.9	32.7	33.80	9.67E-04
	Fluoranthene	1.2	2.5	0.0	32.2	2.71E-04	30.5	34.5	33.80	1.02E-03
	Fluorene	14.7	0.1		11.9	2.71E-04	22.7	25.7	33.80	7.61E-04
	2-Methylnaphthalene	0.4			22.8	2.71E-04	19.7	22.4	33.80	6.61E-04
	Naphthalene	0.4	0.3	0.0	11.9	2.71E-04	10.8	12.2	33.80	3.61E-04
	Phenanthrene	1.0	0.8	0.1	14.7	2.71E-04	14.1	16.0	33.8	4.72E-04
	Pyrene	9.4	2.5	0.0	29.5	2.71E-04	35.2	39.9	33.80	1.18E-03
	Sum PAHs	72.7	12.3	0.7	289.1	3.80E-03	318.6	360.8		0.01
DDTs	DDT	10.6	0.3	0.0	0.2	5.65E-06	9.4	10.7	2.80E-03	3.81
PCBs	Total Aroclors	66.0	15.3	0.4	360.7	1.14E-04	376.0	425.8	0.18	2.37
									Hazard Index	42.62

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 0.883 kg assumed, see text.

Table 3-4b. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the black-crowned night heron.

Upper Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day)					Total Assimilated[1]	Total Assimilated[2]	TRV	Hazard Quotient
		Fish	Crab	Insects	Sediment	Water	(µg CoC/day)	(µg CoC/kg Bw/day)	(mg CoC/kg Bw/day)	
Inorganics	Arsenic	93.8	36.6	0.5	35.1	1.17E-03	141.2	159.9	5.14	0.03
	Cadmium	23.9	59.1	1.9	49.6	6.51E-05	114.4	129.5	1.45	0.09
	Chromium	395.9	91.5	2.1	2413.3	6.73E-04	2467.4	2794.3	1.00	2.79
	Copper	2808.7	3389.4	57.8	18180.1	6.57E-03	20770.5	23522.6	28.13	0.84
	Lead	2018.6	743.3	4.6	12844.0	7.44E-04	13268.9	15027.1	2.05	7.33
	Mercury	2.6	0.9	0.0	8.3	2.99E-05	10.1	11.4	0.03	0.36
	Nickel	182.6	155.8	1.9	434.4	6.35E-04	658.4	745.7	77.4	9.63E-03
	Silver	4.4			8.6	9.23E-05	11.1	12.5	12.5	1.00E-03
	Zinc	9704.1	200.8	160.1	2788.7	6.89E-03	10925.6	12373.3	11.30	1.09
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	4.6E-04	5.2E-04	1.40E-05	0.04
PAHs	Acenaphthene	0.9	0.1	0.0	2.1	2.71E-04	2.7	3.0	33.80	8.93E-05
	Acenaphthylene	0.4	0.1	0.0	4.0	2.71E-04	3.9	4.4	33.8	1.31E-04
	Anthracene	1.4	0.1	0.0	2.9	2.71E-04	3.8	4.3	33.80	1.27E-04
	Benz(a)anthracene	4.8	0.9	0.1	8.6	2.71E-04	12.2	13.9	33.80	4.10E-04
	Benzo(a)pyrene	7.8	1.4	0.1	8.6	2.71E-04	15.2	17.3	33.80	5.11E-04
	Benzo(b)fluoranthene	19.5	1.5	0.1	19.6	2.71E-04	34.6	39.2	33.80	1.16E-03
	Chrysene	10.6	1.5	0.1	10.5	2.71E-04	19.2	21.8	33.80	6.44E-04
	Dibenz(a,h)anthracene	1.2	0.5	0.1	2.0	2.71E-04	3.2	3.6	33.80	1.06E-04
	Fluoranthene	14.7	2.5	0.0	21.5	2.71E-04	32.8	37.2	33.80	1.10E-03
	Fluorene	0.4	0.1		2.1	2.71E-04	2.3	2.6	33.80	7.66E-05
	2-Methylnaphthalene	0.4			4.6	2.71E-04	4.2	4.8	33.80	1.42E-04
	Naphthalene	1.0	0.3	0.0	4.6	2.71E-04	5.0	5.7	33.80	1.68E-04
	Phenanthrene	9.4	0.8	0.1	11.3	2.71E-04	18.2	20.6	33.8	6.11E-04
	Pyrene	10.6	2.5	0.0	17.7	2.71E-04	26.2	29.7	33.80	8.78E-04
	Sum PAHs	83.0	12.3	0.7	119.9	3.80E-03	183.6	207.9		6.15E-03
DDTs	DDT	1.9	0.3	0.0	0.0	5.65E-06	1.9	2.1	2.80E-03	0.76
PCBs	Total Aroclors	66.0	15.3	0.4	31.5	1.14E-04	96.3	109.0	0.18	0.61
									Hazard Index	13.96

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 0.883 kg assumed, see text.

Table 3-4c. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the black-crowned night heron.

Great Meadows

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	81.9	79.8	0.5	38.1	1.79E-03	170.2	192.8	5.14	0.04
	Cadmium	3.1	4.1	1.6	0.9	5.43E-05	8.2	9.3	1.45	6.42E-03
	Chromium	380.5	174.9	3.6	286.9	1.21E-03	719.0	814.3	1.00	0.81
	Copper	1163.7	2470.5	61.2	901.0	2.81E-03	3906.9	4424.6	28.13	0.16
	Lead	109.2	171.9	14.9	378.1	1.14E-03	572.9	648.8	2.05	0.32
	Mercury	2.6	1.1	0.0	3.2	2.66E-05	5.8	6.6	0.03	0.21
	Nickel	76.8	128.9	1.6	90.9	2.71E-04	253.5	287.0	77.4	3.71E-03
	Silver	6.0			1.7	9.77E-04	6.6	7.4	12.5	5.94E-04
	Zinc	7303.2	107.5	179.6	514.8	3.42E-03	6889.3	7802.2	11.30	0.69
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	1.9E-04	2.2E-04	1.40E-05	0.02
PAHs	Acenaphthene	0.4	0.1	0.0	3.9	2.71E-04	3.8	4.3	33.80	1.27E-04
	Acenaphthylene	0.4	0.1	0.0	3.9	2.71E-04	3.8	4.3	33.8	1.27E-04
	Anthracene	0.4	0.1	0.0	3.5	2.71E-04	3.4	3.9	33.80	1.15E-04
	Benz(a)anthracene	0.4	0.1	0.1	18.8	2.71E-04	16.5	18.7	33.80	5.53E-04
	Benzo(a)pyrene	0.9	0.3	0.1	15.6	2.71E-04	14.3	16.2	33.80	4.78E-04
	Benzo(b)fluoranthene	1.2	0.4	0.1	32.2	2.71E-04	28.8	32.6	33.80	9.65E-04
	Chrysene	0.4	0.1	0.1	18.0	2.71E-04	15.8	17.9	33.80	5.30E-04
	Dibenz(a,h)anthracene	0.4	0.1	0.1	5.4	2.71E-04	5.1	5.8	33.80	1.71E-04
	Fluoranthene	0.4	0.1	0.0	37.5	2.71E-04	32.4	36.7	33.80	1.09E-03
	Fluorene	0.4	0.1		3.9	2.71E-04	3.8	4.3	33.80	1.26E-04
	2-Methylnaphthalene	0.4			3.9	2.71E-04	3.7	4.2	33.80	1.23E-04
	Naphthalene	0.4	0.2	0.0	3.9	2.71E-04	3.9	4.4	33.80	1.30E-04
	Phenanthrene	0.4	0.1	0.1	18.0	2.71E-04	15.8	17.9	33.8	5.30E-04
	Pyrene	0.4	0.1	0.0	24.9	2.71E-04	21.7	24.5	33.80	7.26E-04
	Sum PAHs	7.2	2.1	0.7	193.2	3.80E-03	172.7	195.6		5.79E-03
DDT	DDT	5.1	0.2	0.0	0.0	1.36E-05	4.5	5.1	2.80E-03	1.83
PCB	PCBs	66.0	2.8	0.3	0.2	1.36E-04	59.0	66.8	0.18	0.37
									Hazard Index	4.46

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 0.883 kg assumed, see text.

Table 3-5a. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the red-winged black bird.

Middle Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	0.0	0.0	5.5	0.0	1.80E-04	4.2	77.3	5.14	0.02
	Cadmium	0.0	0.0	21.4	0.0	1.00E-05	16.3	302.6	1.45	0.21
	Chromium	0.0	0.0	23.6	0.0	1.04E-04	18.1	334.7	1.00	0.33
	Copper	0.0	0.0	636.2	0.0	1.01E-03	486.7	9012.4	28.13	0.32
	Lead	0.0	0.0	50.4	0.0	1.14E-04	38.6	714.6	2.05	0.35
	Mercury	0.0	0.0	0.5	0.0	4.59E-06	0.3	6.4	0.03	0.20
	Nickel	0.0	0.0	20.4	0.0	9.77E-05	15.6	289.7	77.4	3.74E-03
	Silver	0.0			0.0	1.42E-05	0.0	0.0	12.5	1.61E-08
	Zinc	0.0	0.0	1763.1	0.0	1.06E-03	1348.8	24977.2	11.30	2.21
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		4.3E-05	8.0E-04	1.40E-05	0.06
PAHs	Acenaphthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Acenaphthylene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.8	9.52E-05
	Anthracene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Benz(a)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(a)pyrene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(b)fluoranthene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Chrysene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Dibenz(a,h)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Fluoranthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Fluorene	0.0	0.0		0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	2-Methylnaphthalene	0.0			0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	Naphthalene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Phenanthrene	0.0	0.0	0.6	0.0	4.17E-05	0.5	8.4	33.8	2.48E-04
	Pyrene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Sum PAHs	0.0	0.0	7.6	0.0	5.84E-04	5.8	108.2		3.20E-03
DDTs	DDT	0.0	0.0	0.3	0.0	8.68E-07	0.2	3.9	2.80E-03	1.38
PCBs	Total Aroclors	0.0	0.0	3.9	0.0	1.75E-05	3.0	55.4	0.18	0.31
									Hazard Index	5.39

1- Home range Factor of 0.9 applied; see Table 2-1.

2 - Body weight (BW) of 0.054 kg assumed, see text.

Table 3-5b. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the red-winged black bird.

Upper Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	0.0	0.0	5.5	0.0	1.80E-04	4.2	77.3	5.14	0.02
	Cadmium	0.0	0.0	21.4	0.0	1.00E-05	16.3	302.6	1.45	0.21
	Chromium	0.0	0.0	23.6	0.0	1.04E-04	18.1	334.7	1.00	0.33
	Copper	0.0	0.0	636.2	0.0	1.01E-03	486.7	9012.4	28.13	0.32
	Lead	0.0	0.0	50.4	0.0	1.14E-04	38.6	714.6	2.05	0.35
	Mercury	0.0	0.0	0.5	0.0	4.59E-06	0.3	6.4	0.03	0.20
	Nickel	0.0	0.0	20.4	0.0	9.77E-05	15.6	289.7	77.4	3.74E-03
	Silver	0.0			0.0	1.42E-05	0.0	0.0	12.5	1.61E-08
	Zinc	0.0	0.0	1763.1	0.0	1.06E-03	1348.8	24977.2	11.30	2.21
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		4.3E-05	8.0E-04	1.40E-05	0.06
PAHs	Acenaphthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Acenaphthylene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.8	9.52E-05
	Anthracene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Benz(a)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(a)pyrene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(b)fluoranthene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Chrysene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Dibenz(a,h)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Fluoranthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Fluorene	0.0	0.0		0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	2-Methylnaphthalene	0.0			0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	Naphthalene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Phenanthrene	0.0	0.0	0.6	0.0	4.17E-05	0.5	8.4	33.8	2.48E-04
	Pyrene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Sum PAHs	0.0	0.0	7.6	0.0	5.84E-04	5.8	108.2		3.20E-03
DDTs	DDT	0.0	0.0	0.3	0.0	8.68E-07	0.2	3.9	2.80E-03	1.38
PCBs	Total Aroclors	0.0	0.0	3.9	0.0	1.75E-05	3.0	55.4	0.18	0.31
									Hazard Index	5.39

1- Home range Factor of 0.9 applied; see Table 2-1.

2 - Body weight (BW) of 0.054 kg assumed, see text.

Table 3-5c. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the red-winged black bird.

Great Meadows

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	0.0	0.0	5.7	0.0	1.07E-04	4.3	80.5	5.14	0.02
	Cadmium	0.0	0.0	17.3	0.0	7.99E-06	13.2	244.6	1.45	0.17
	Chromium	0.0	0.0	39.3	0.0	4.45E-05	30.1	556.8	1.00	0.56
	Copper	0.0	0.0	674.6	0.0	1.67E-04	516.0	9556.4	28.13	0.34
	Lead	0.0	0.0	163.6	0.0	3.58E-05	125.1	2317.5	2.05	1.13
	Mercury	0.0	0.0	0.3	0.0	1.30E-06	0.3	4.8	0.03	0.15
	Nickel	0.0	0.0	17.7	0.0	3.79E-05	13.6	251.1	77.4	3.24E-03
	Silver	0.0			0.0	4.66E-05	0.0	0.0	12.5	5.28E-08
	Zinc	0.0	0.0	1977.8	0.0	2.47E-04	1513.0	28018.9	11.30	2.48
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		2.7E-05	4.9E-04	1.40E-05	0.04
PAHs	Acenaphthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Acenaphthylene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.8	9.52E-05
	Anthracene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Benz(a)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(a)pyrene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(b)fluoranthene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Chrysene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Dibenz(a,h)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Fluoranthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Fluorene	0.0	0.0		0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	2-Methylnaphthalene	0.0			0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	Naphthalene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Phenanthrene	0.0	0.0	1.1	0.0	4.17E-05	0.8	15.1	33.8	4.48E-04
	Pyrene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Sum PAHs	0.0	0.0	8.1	0.0	5.84E-04	6.2	114.9		3.40E-03
DDTs	DDT	0.0	0.0	0.3	0.0	1.01E-06	0.2	3.9	2.80E-03	1.38
PCBs	Total Aroclors	0.0	0.0	3.2	0.0	1.41E-05	2.4	45.1	0.18	0.25
									Hazard Index	6.51

1- Home range Factor of 0.9 applied; see Table 2-1.

2 - Body weight (BW) of 0.054 kg assumed, see text.

Table 3-6a. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the red-winged black bird.

Middle Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day)					Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
		Fish	Crab	Insects	Sediment	Water				
Inorganics	Arsenic	0.0	0.0	5.5	0.0	1.80E-04	4.2	77.3	5.14	0.02
	Cadmium	0.0	0.0	21.4	0.0	1.00E-05	16.3	302.6	1.45	0.21
	Chromium	0.0	0.0	23.6	0.0	1.04E-04	18.1	334.7	1.00	0.33
	Copper	0.0	0.0	636.2	0.0	1.01E-03	486.7	9012.4	28.13	0.32
	Lead	0.0	0.0	50.4	0.0	1.14E-04	38.6	714.6	2.05	0.35
	Mercury	0.0	0.0	0.5	0.0	4.59E-06	0.3	6.4	0.03	0.20
	Nickel	0.0	0.0	20.4	0.0	9.77E-05	15.6	289.7	77.4	3.74E-03
	Silver	0.0			0.0	1.42E-05	0.0	0.0	12.5	1.61E-08
	Zinc	0.0	0.0	1763.1	0.0	1.06E-03	1348.8	24977.2	11.30	2.21
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	4.3E-05	8.0E-04	1.40E-05	0.06
PAHs	Acenaphthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Acenaphthylene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.8	9.52E-05
	Anthracene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Benz(a)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(a)pyrene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(b)fluoranthene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Chrysene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Dibenz(a,h)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Fluoranthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Fluorene	0.0	0.0		0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	2-Methylnaphthalene	0.0			0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	Naphthalene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Phenanthrene	0.0	0.0	0.6	0.0	4.17E-05	0.5	8.4	33.8	2.48E-04
	Pyrene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Sum PAHs	0.0	0.0	7.6	0.0	5.84E-04	5.8	108.2		3.20E-03
DDTs	DDT	0.0	0.0	0.3	0.0	8.68E-07	0.2	3.9	2.80E-03	1.38
PCBs	Total Aroclors	0.0	0.0	3.9	0.0	1.75E-05	3.0	55.4	0.18	0.31
									Hazard Index	5.39

1- Home range Factor of 0.9 applied; see Table 2-1

2 - Body weight (BW) of 0.054 kg assumed, see text.

Table 3-6b. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the red-winged black bird.

Upper Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	0.0	0.0	5.5	0.0	1.80E-04	4.2	77.3	5.14	0.02
	Cadmium	0.0	0.0	21.4	0.0	1.00E-05	16.3	302.6	1.45	0.21
	Chromium	0.0	0.0	23.6	0.0	1.04E-04	18.1	334.7	1.00	0.33
	Copper	0.0	0.0	636.2	0.0	1.01E-03	486.7	9012.4	28.13	0.32
	Lead	0.0	0.0	50.4	0.0	1.14E-04	38.6	714.6	2.05	0.35
	Mercury	0.0	0.0	0.5	0.0	4.59E-06	0.3	6.4	0.03	0.20
	Nickel	0.0	0.0	20.4	0.0	9.77E-05	15.6	289.7	77.4	3.74E-03
	Silver	0.0			0.0	1.42E-05	0.0	0.0	12.5	1.61E-08
	Zinc	0.0	0.0	1763.1	0.0	1.06E-03	1348.8	24977.2	11.30	2.21
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	4.3E-05	8.0E-04	1.40E-05	0.06
PAHs	Acenaphthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Acenaphthylene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.8	9.52E-05
	Anthracene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Benz(a)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(a)pyrene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(b)fluoranthene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Chrysene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Dibenz(a,h)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Fluoranthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Fluorene	0.0	0.0		0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	2-Methylnaphthalene	0.0			0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	Naphthalene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Phenanthrene	0.0	0.0	0.6	0.0	4.17E-05	0.5	8.4	33.8	2.48E-04
	Pyrene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Sum PAHs	0.0	0.0	7.6	0.0	5.84E-04	5.8	108.2		3.20E-03
DDTs	DDT	0.0	0.0	0.3	0.0	8.68E-07	0.2	3.9	2.80E-03	1.38
PCBs	Total Aroclors	0.0	0.0	3.9	0.0	1.75E-05	3.0	55.4	0.18	0.31
									Hazard Index	5.39

1- Home range Factor of 0.9 applied; see Table 2-1.

2 - Body weight (BW) of 0.054 kg assumed, see text.

Table 3-6c. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the red-winged black bird.

Great Meadows

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	0.0	0.0	5.7	0.0	2.75E-04	4.3	80.5	5.14	0.02
	Cadmium	0.0	0.0	17.3	0.0	8.35E-06	13.2	244.6	1.45	0.17
	Chromium	0.0	0.0	39.3	0.0	1.86E-04	30.1	556.8	1.00	0.56
	Copper	0.0	0.0	674.6	0.0	4.32E-04	516.0	9556.4	28.13	0.34
	Lead	0.0	0.0	163.6	0.0	1.75E-04	125.1	2317.5	2.05	1.13
	Mercury	0.0	0.0	0.3	0.0	4.09E-06	0.3	4.8	0.03	0.15
	Nickel	0.0	0.0	17.7	0.0	4.17E-05	13.6	251.1	77.4	3.24E-03
	Silver	0.0			0.0	1.50E-04	0.0	0.0	12.5	1.70E-07
	Zinc	0.0	0.0	1977.8	0.0	5.26E-04	1513.0	28018.9	11.30	2.48
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	2.7E-05	4.9E-04	1.40E-05	0.04
PAHs	Acenaphthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Acenaphthylene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.8	9.52E-05
	Anthracene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Benz(a)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(a)pyrene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Benzo(b)fluoranthene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Chrysene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Dibenz(a,h)anthracene	0.0	0.0	1.1	0.0	4.17E-05	0.9	16.1	33.80	4.76E-04
	Fluoranthene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Fluorene	0.0	0.0		0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	2-Methylnaphthalene	0.0			0.0	4.17E-05	0.0	0.0	33.80	1.75E-08
	Naphthalene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Phenanthrene	0.0	0.0	1.1	0.0	4.17E-05	0.8	15.1	33.8	4.48E-04
	Pyrene	0.0	0.0	0.2	0.0	4.17E-05	0.2	3.2	33.80	9.52E-05
	Sum PAHs	0.0	0.0	8.1	0.0	5.84E-04	6.2	114.9		3.40E-03
DDTs	DDT	0.0	0.0	0.3	0.0	2.09E-06	0.2	3.9	2.80E-03	1.38
PCBs	Total Aroclors	0.0	0.0	3.2	0.0	2.09E-05	2.4	45.1	0.18	0.25
									Hazard Index	6.51

1- Home range Factor of 0.9 applied; see Table 2-1.

2 - Body weight (BW) of 0.054 kg assumed, see text.

Table 3-7a. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the raccoon.

Middle Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	37.1	238.0	86.0	225.4	1.07E-02	498.5	83.1	0.13	0.66
	Cadmium	5.7	384.4	336.9	175.6	5.96E-04	767.3	127.9	1.00	0.13
	Chromium	93.5	594.9	372.8	4343.5	6.16E-03	4594.0	765.7	3.28	0.23
	Copper	799.4	22036.7	10036.0	113764.7	6.01E-02	124641.4	20773.6	11.71	1.77
	Lead	408.3	4832.6	795.7	92115.5	6.80E-03	83429.3	13904.9	8.00	1.74
	Mercury	0.9	6.1	7.2	12.7	2.73E-04	22.8	3.8	0.03	0.12
	Nickel	46.4	1012.9	322.6	3636.5	5.81E-03	4265.6	710.9	40.0	0.02
	Silver	1.6			19.2	8.44E-04	17.6	2.9	18.1	1.62E-04
	Zinc	3575.9	8350.3	27814.1	24809.8	6.31E-02	54867.7	9144.6	160	0.06
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		1.9E-03	3.2E-04	1.00E-03	3.20E-04
PAHs	Acenaphthene	0.4	0.8	3.6	39.3	2.48E-03	37.4	6.2	175	3.56E-05
	Acenaphthylene	0.2	0.8	3.6	38.4	2.48E-03	36.4	6.1	25.7	2.36E-04
	Anthracene	0.6	0.8	3.6	38.6	2.48E-03	37.0	6.2	500	1.23E-05
	Benz(a)anthracene	2.0	6.1	17.9	66.5	2.48E-03	78.7	13.1	0.45	0.03
	Benzo(a)pyrene	3.3	9.2	17.9	60.0	2.48E-03	76.8	12.8	1.00	0.01
	Naphthalene	0.4	1.8	3.6	28.9	2.48E-03	29.5	4.9	153	3.22E-05
	Phenanthrene	3.9	4.9	9.3	63.2	2.48E-03	69.1	11.5	257.0	4.48E-05
	Pyrene	4.4	16.5	3.6	144.0	2.48E-03	143.2	23.9	219	1.09E-04
	Sum PAHs	46.0	109.7	159.9	1226.1	4.47E-02	1310.4	515.9		0.04
DDTs	DDE	0.1	1.7	4.3	0.4	5.16E-05	5.5	0.9	9.50	9.65E-05
PCBs	Total Aroclors	7.9	99.5	61.6	446.9	1.04E-03	523.5	87.2	0.14	0.62
									Hazard Index	5.39

1- Home range Factor of 1.0 applied; see Table 2-1

2 - Body weight (BW) of 6.00 kg assumed, see text.

3 - No TRV Data Available.

Table 3-7b. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the raccoon.

Upper Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	37.1	238.0	86.0	165.0	1.07E-02	447.2	74.5	0.13	0.59
	Cadmium	5.7	384.4	336.9	114.4	5.96E-04	715.3	119.2	1.00	0.12
	Chromium	93.5	594.9	372.8	4420.7	6.16E-03	4659.6	776.6	3.28	0.24
	Copper	799.4	22036.7	10036.0	26685.0	6.01E-02	50623.6	8437.3	11.71	0.72
	Lead	408.3	4832.6	795.7	29747.8	6.80E-03	30416.7	5069.5	8.00	0.63
	Mercury	0.9	6.1	7.2	12.6	2.73E-04	22.7	3.8	0.03	0.12
	Nickel	46.4	1012.9	322.6	1415.5	5.81E-03	2377.8	396.3	40.0	9.91E-03
	Silver	1.6			30.6	8.44E-04	27.3	4.6	18.1	2.51E-04
	Zinc	3575.9	8350.3	27814.1	9646.0	6.31E-02	41978.5	6996.4	160	0.04
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		1.9E-03	3.2E-04	1.00E-03	3.22E-04
PAHs	Acenaphthene	0.4	0.8	3.6	8.5	2.48E-03	11.3	1.9	175	1.07E-05
	Acenaphthylene	0.2	0.8	3.6	14.5	2.48E-03	16.2	2.7	25.7	1.05E-04
	Anthracene	0.6	0.8	3.6	13.2	2.48E-03	15.4	2.6	500	5.13E-06
	Benz(a)anthracene	2.0	6.1	17.9	42.2	2.48E-03	58.0	9.7	0.45	0.02
	Benzo(a)pyrene	3.3	9.2	17.9	38.1	2.48E-03	58.2	9.7	1.00	9.70E-03
	Naphthalene	0.4	1.8	3.6	14.8	2.48E-03	17.6	2.9	153	1.92E-05
	Phenanthrene	3.9	4.9	9.3	44.9	2.48E-03	53.5	8.9	257.0	3.47E-05
	Pyrene	4.4	16.5	3.6	81.2	2.48E-03	89.8	15.0	219	6.85E-05
	Sum PAHs	46.0	109.7	159.9	817.7	4.47E-02	963.3	458.1		0.03
DDTs	DDE	0.1	1.7	4.3	0.2	5.16E-05	5.3	0.9	9.50	9.33E-05
PCBs	Total Aroclors	7.9	99.5	61.6	73.8	1.04E-03	206.4	34.4	0.14	0.25
									Hazard Index	2.75

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 6.00 kg assumed, see text.

3 - No TRV Data Available.

Table 3-7c. Mean ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the raccoon.

Great Meadows

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	32.1	518.8	89.6	208.8	6.36E-03	721.9	120.3	0.13	0.95
	Cadmium	0.7	26.9	272.4	8.6	4.75E-04	262.4	43.7	1.00	0.04
	Chromium	112.1	1137.3	620.1	1711.5	2.65E-03	3043.8	507.3	3.28	0.15
	Copper	391.1	16062.1	10641.8	4528.8	9.93E-03	26880.3	4480.0	11.71	0.38
	Lead	32.8	1117.4	2580.7	2023.5	2.13E-03	4891.3	815.2	8.00	0.10
	Mercury	0.9	7.0	5.4	17.5	7.73E-05	26.2	4.4	0.03	0.14
	Nickel	25.7	838.0	279.6	576.1	2.26E-03	1461.5	243.6	40.0	6.09E-03
	Silver	2.5			14.9	2.77E-03	14.8	2.5	18.1	1.36E-04
	Zinc	2919.3	7163.1	31201.2	3783.0	1.47E-02	38306.6	6384.4	160	0.04
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0		1.1E-03	1.8E-04	1.00E-03	1.75E-04
PAHs	Acenaphthene	0.2	0.8	3.6	17.3	2.48E-03	18.6	3.1	175	1.77E-05
	Acenaphthylene	0.2	0.8	3.6	17.3	2.48E-03	18.6	3.1	25.7	1.20E-04
	Anthracene	0.2	0.8	3.6	16.3	2.48E-03	17.7	2.9	500	5.89E-06
	Benz(a)anthracene	0.2	0.8	17.9	56.8	2.48E-03	64.3	10.7	0.45	0.02
	Benzo(a)pyrene	0.4	1.8	17.9	48.0	2.48E-03	57.9	9.6	1.00	9.64E-03
	Dibenz(a,h)anthracene	0.2	0.8	17.9	21.2	2.48E-03	34.1	5.7	7.70	7.37E-04
	Fluoranthene	0.2	0.8	3.6	106.2	2.48E-03	94.1	15.7	50.00	3.14E-04
	Fluorene	0.2	0.8		17.3	2.48E-03	15.5	2.6	250	1.04E-05
	2-Methylnaphthalene	0.2			17.3	2.48E-03	14.9	2.5	153	1.63E-05
	Naphthalene	0.2	1.5	3.6	17.3	2.48E-03	19.2	3.2	153	2.10E-05
	Phenanthrene	0.2	0.8	16.8	53.5	2.48E-03	60.6	10.1	257.0	3.93E-05
	Pyrene	0.2	0.8	3.6	70.0	2.48E-03	63.4	10.6	219	4.83E-05
	Sum PAHs	14.2	43.2	167.4	888.2	4.47E-02	946.1	455.2		0.03
DDTs	DDE	2.1	1.1	4.3	0.1	6.03E-05	6.4	1.1	9.50	1.13E-04
PCBs	Total Aroclors	7.9	18.3	50.2	2.4	8.41E-04	66.9	11.2	0.14	0.08
									Hazard Index	1.94

1- Home range Factor of 1.0 applied; see Table 2-1.

2 - Body weight (BW) of 6.00 kg assumed, see text.

3 - No TRV Data Available.

Table 3-8a. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the raccoon.

Middle Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	39.3	238.0	86.0	538.1	1.07E-02	766.2	127.7	0.13	1.01
	Cadmium	10.0	384.4	336.9	633.9	5.96E-04	1160.4	193.4	1.00	0.19
	Chromium	165.6	594.9	372.8	14114.8	6.16E-03	12960.9	2160.1	3.28	0.66
	Copper	1174.8	22036.7	10036.0	591637.0	6.01E-02	531152.0	88525.3	11.71	7.56
	Lead	844.4	4832.6	795.7	645166.1	6.80E-03	553893.0	92315.5	8.00	11.54
	Mercury	1.1	6.1	7.2	47.9	2.73E-04	52.9	8.8	0.03	0.28
	Nickel	76.4	1012.9	322.6	12030.0	5.81E-03	11425.5	1904.3	40.0	0.05
	Silver	1.9			42.3	8.44E-04	37.5	6.2	18.1	3.45E-04
	Zinc	4059.1	1305.8	27814.1	135231.3	6.31E-02	143148.8	23858.1	160	0.15
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	2.3E-03	3.8E-04	1.00E-03	3.84E-04
PAHs	Acenaphthene	0.1	0.8	3.6	239.5	2.48E-03	207.3	34.6	175	1.97E-04
	Acenaphthylene	0.4	0.8	3.6	239.5	2.48E-03	207.6	34.6	25.7	1.35E-03
	Anthracene	0.2	0.8	3.6	239.5	2.48E-03	207.4	34.6	500	6.91E-05
	Benz(a)anthracene	0.6	6.1	17.9	140.9	2.48E-03	140.6	23.4	0.45	0.05
	Benzo(a)pyrene	2.0	9.2	17.9	171.9	2.48E-03	170.8	28.5	1.00	0.03
	Naphthalene	0.2	1.8	3.6	125.4	2.48E-03	111.3	18.6	153	1.22E-04
	Phenanthrene	0.4	4.9	9.3	155.0	2.48E-03	144.1	24.0	257.0	9.35E-05
	Pyrene	3.9	16.5	3.6	309.9	2.48E-03	283.8	47.3	219	2.16E-04
	Sum PAHs	41.6	109.7	159.9	3415.4	4.47E-02	3167.7	527.9		0.09
DDTs	DDE	4.4	1.7	4.3	2.3	5.16E-05	10.8	1.8	9.50	1.89E-04
PCBs	Total Aroclors	27.6	99.5	61.6	3789.3	1.04E-03	3381.3	563.6	0.14	4.03
									Hazard Index	25.55

1- Home range Factor of 1 applied; see Table 2-1.
2 - Body weight (BW) of 6.00 kg assumed, see text.
3 - No TRV Data Available.

Table 3-8b. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the raccoon.

Upper Ferry Creek

Class	Chemical of Concern	Dietary Intake, (µg CoC/day) Fish	Crab	Insects	Sediment	Water	Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
Inorganics	Arsenic	39.3	238.0	86.0	369.1	1.07E-02	622.5	103.7	0.13	0.82
	Cadmium	10.0	384.4	336.9	521.2	5.96E-04	1064.7	177.4	1.00	0.18
	Chromium	165.6	594.9	372.8	25355.9	6.16E-03	22515.8	3752.6	3.28	1.14
	Copper	1174.8	22036.7	10036.0	191014.2	6.01E-02	190622.6	31770.4	11.71	2.71
	Lead	844.4	4832.6	795.7	134949.6	6.80E-03	120209.0	20034.8	8.00	2.50
	Mercury	1.1	6.1	7.2	87.3	2.73E-04	86.4	14.4	0.03	0.45
	Nickel	76.4	1012.9	322.6	4564.1	5.81E-03	5079.5	846.6	40.0	0.02
	Silver	1.9			90.2	8.44E-04	78.2	13.0	18.1	7.20E-04
	Zinc	4059.1	1305.8	27814.1	29300.1	6.31E-02	53107.3	8851.2	160	0.06
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	2.0E-03	3.3E-04	1.00E-03	3.28E-04
PAHs	Acenaphthene	0.4	0.8	3.6	22.5	2.48E-03	23.2	3.9	175	2.21E-05
	Acenaphthylene	0.2	0.8	3.6	42.3	2.48E-03	39.8	6.6	25.7	2.58E-04
	Anthracene	0.6	0.8	3.6	31.0	2.48E-03	30.5	5.1	500	1.02E-05
	Benz(a)anthracene	2.0	6.1	17.9	90.2	2.48E-03	98.8	16.5	0.45	0.04
	Benzo(a)pyrene	3.3	9.2	17.9	90.2	2.48E-03	102.4	17.1	1.00	0.02
	Naphthalene	0.4	1.8	3.6	47.9	2.48E-03	45.7	7.6	153	4.99E-05
	Phenanthrene	3.9	4.9	9.3	118.3	2.48E-03	116.0	19.3	257.0	7.52E-05
	Pyrene	4.4	16.5	3.6	185.9	2.48E-03	178.9	29.8	219	1.36E-04
	Sum PAHs	46.0	109.7	159.9	1638.6	4.47E-02	1661.0	276.8		0.06
DDTs	DDE	0.8	1.7	4.3	0.4	5.16E-05	6.1	1.0	9.50	1.07E-04
PCBs	Total Aroclors	27.6	99.5	61.6	331.5	1.04E-03	442.2	73.7	0.14	0.53
									Hazard Index	8.47

1- Home range Factor of 1 applied; see Table 2-1.

2 - Body weight (BW) of 6.00 kg assumed, see text.

3 - No TRV Data Available.

Table 3-8c. Maximum ingestion rates and doses of CoCs, by media, with Hazard Quotient calculations for the raccoon.

Great Meadows

Class	Chemical of Concern	Dietary Intake, (µg CoC/day)					Total Assimilated[1] (µg CoC/day)	Total Assimilated[2] (µg CoC/kg Bw/day)	TRV (mg CoC/kg Bw/day)	Hazard Quotient
		Fish	Crab	Insects	Sediment	Water				
Inorganics	Arsenic	34.3	518.8	89.6	400.1	1.64E-02	886.3	147.7	0.13	1.17
	Cadmium	1.3	26.9	272.4	9.3	4.97E-04	263.4	43.9	1.00	0.04
	Chromium	159.2	1137.3	620.1	3014.5	1.11E-02	4191.4	698.6	3.28	0.21
	Copper	486.8	16062.1	10641.8	9466.2	2.57E-02	31158.4	5193.1	11.71	0.44
	Lead	45.7	1117.4	2580.7	3972.4	1.04E-02	6558.7	1093.1	8.00	0.14
	Mercury	1.1	7.0	5.4	33.8	2.43E-04	40.2	6.7	0.03	0.21
	Nickel	32.1	838.0	279.6	955.1	2.48E-03	1789.1	298.2	40.0	7.45E-03
	Silver	2.5			18.3	8.94E-03	17.7	2.9	18.1	1.63E-04
	Zinc	3054.9	698.7	31201.2	5409.3	3.13E-02	34309.4	5718.2	160	0.04
Dioxins	2,3,7,8-TCDD	0.0	0.0	0.0	0.0	0.00E+00	1.1E-03	1.8E-04	1.00E-03	1.76E-04
PAHs	Acenaphthene	0.2	0.8	3.6	40.9	2.48E-03	38.6	6.4	175	3.67E-05
	Acenaphthylene	0.2	0.8	3.6	40.9	2.48E-03	38.6	6.4	25.7	2.50E-04
	Anthracene	0.2	0.8	3.6	36.6	2.48E-03	35.0	5.8	500	1.17E-05
	Benz(a)anthracene	0.2	0.8	17.9	197.2	2.48E-03	183.7	30.6	0.45	0.07
	Benzo(a)pyrene	0.4	1.8	17.9	163.4	2.48E-03	156.0	26.0	1.00	0.03
	Naphthalene	0.2	1.5	3.6	40.9	2.48E-03	39.2	6.5	153	4.29E-05
	Phenanthrene	0.2	0.8	16.8	188.8	2.48E-03	175.6	29.3	257.0	1.14E-04
	Pyrene	0.2	0.8	3.6	262.0	2.48E-03	226.6	37.8	219	1.73E-04
	Sum PAHs	14.2	43.2	167.4	2408.2	4.47E-02	2238.1	373.0		0.10
DDTs	DDE	2.1	1.1	4.3	0.1	1.24E-04	6.5	1.1	9.50	1.14E-04
PCBs	Total Aroclors	27.6	18.3	50.2	2.5	1.24E-03	83.8	14.0	0.14	0.10
									Hazard Index	2.46

1- Home range Factor of 1 applied; see Table 2-1.

2 - Body weight (BW) of 6.00 kg assumed, see text.

3 - No TRV Data Available.

Table 4.1. Hazard Indices of black crowned night heron, red-winged black bird, and raccoon for the Middle and Upper Ferry Creek and reference area.

	Animal	Middle Ferry Creek	Upper Ferry Creek	Reference
Mean	Black-crowned night heron	8.1	4.7	3.8
	Red-winged black bird	5.4	5.4	6.5
	Raccoon	5.4	2.8	1.9
Maximum	Black-crowned night heron	42.6	14.0	4.5
	Red-winged black bird	5.4	5.4	6.5
	Raccoon	25.6	8.5	2.5

Table 4-2a. Mean Hazard Quotient values and percent Hazard Quotient of Hazard Indices for heron, blackbird, and raccoon[1,2].

Black-crowned night heron

Class	Chemical of Concern	Middle Ferry Creek HQ	Middle Ferry Creek %HQ of HI	Upper Ferry Creek HQ	Upper Ferry Creek %HQ of HI	Great Meadows HQ	Great Meadows %HQ of HI
Inorganics	Arsenic	0.03	0.34%	0.03	0.56%	0.03	0.87%
	Cadmium	0.06	0.75%	0.06	1.21%	5.47E-03	0.14%
	Chromium	0.70	8.69%	0.71	15.12%	0.59	15.34%
	Copper	0.55	6.85%	0.27	5.75%	0.13	3.49%
	Lead	4.93	60.89%	2.14	45.53%	0.21	5.62%
	Mercury	0.13	1.57%	0.13	2.71%	0.15	3.93%
	Nickel	7.64E-03	0.09%	5.02E-03	0.11%	3.07E-03	0.08%
	Silver	4.30E-04	0.01%	5.13E-04	0.01%	5.69E-04	0.01%
	Zinc	1.05	13.01%	0.93	19.79%	0.73	19.21%
Dioxins	2,3,7,8-TCDD	0.03	0.37%	0.03	0.64%	0.01	0.39%
PAHs	Sum PAHs	5.29E-03	0.00%	4.19E-03	0.00%	1.93E-03	0.00%
DDTs	DDT	0.18	2.27%	0.18	3.76%	1.83	47.78%
PCBs	Total Aroclors	0.41	5.09%	0.22	4.72%	0.12	3.09%
	Hazard Index	8.09		4.70		3.82	

Red-winged blackbird

Class	Chemical of Concern	Middle Ferry Creek HQ	Middle Ferry Creek %HQ of HI	Upper Ferry Creek HQ	Upper Ferry Creek %HQ of HI	Great Meadows HQ	Great Meadows %HQ of HI
Inorganics	Arsenic	0.02	0.3%	0.02	0.3%	0.02	0.24%
	Cadmium	0.21	3.9%	0.21	3.9%	0.17	2.59%
	Chromium	0.33	6.2%	0.33	6.2%	0.56	8.55%
	Copper	0.32	5.9%	0.32	5.9%	0.34	5.22%
	Lead	0.35	6.5%	0.35	6.5%	1.13	17.36%
	Mercury	0.20	3.7%	0.20	3.7%	0.15	2.32%
	Nickel	3.74E-03	0.1%	3.74E-03	0.1%	3.24E-03	0.05%
	Silver	1.61E-08	0.0%	1.61E-08	0.0%	5.28E-08	0.00%
	Zinc	2.21	41.0%	2.21	41.0%	2.48	38.07%
Dioxins	2,3,7,8-TCDD	0.06	1.1%	0.06	1.1%	0.04	0.54%
PAHs	Sum PAHs	3.20E-03	0.1%	3.20E-03	0.1%	3.40E-03	0.05%
DDTs	DDT	1.38	25.6%	1.38	25.6%	1.38	21.18%
PCBs	Total Aroclors	0.31	5.7%	0.31	5.7%	0.25	3.84%
	Hazard Index	5.39		5.39		6.51	

Raccoon

Class	Chemical of Concern	Middle Ferry Creek HQ	Middle Ferry Creek %HQ of HI	Upper Ferry Creek HQ	Upper Ferry Creek %HQ of HI	Great Meadows HQ	Great Meadows %HQ of HI
Inorganics	Arsenic	0.66	12.22%	0.59	21.49%	0.95	49.35%
	Cadmium	0.13	2.37%	0.12	4.33%	0.04	2.26%
	Chromium	0.23	4.33%	0.24	8.60%	0.15	7.99%
	Copper	1.77	32.89%	0.72	26.18%	0.38	19.77%
	Lead	1.74	32.22%	0.63	23.02%	0.10	5.27%
	Mercury	0.12	2.20%	0.12	4.30%	0.14	7.05%
	Nickel	0.02	0.33%	9.91E-03	0.36%	6.09E-03	0.31%
	Silver	1.62E-04	0.00%	2.51E-04	0.01%	1.36E-04	0.01%
	Zinc	0.06	1.06%	0.04	1.59%	0.04	2.06%
Dioxins	2,3,7,8-TCDD	3.20E-04	0.01%	3.22E-04	0.01%	1.75E-04	0.01%
PAHs	Sum PAHs	0.04	0.82%	0.03	1.18%	0.03	F
DDTs	DDT	9.65E-05	0.00%	9.33E-05	0.00%	1.13E-04	0.01%
PCBs	Total Aroclors	0.62	11.55%	0.25	8.93%	0.08	4.12%
	Hazard Index	5.39		2.75		1.94	

1 - Hazard Quotients and Hazard Indices are found in Tables 3-3, 3-6, and 3-8.

2 - % HQ of HI = HQ/HI.

Table 4-2b. Maximum Hazard Quotient values and percent Hazard Quotient of Hazard Indices for heron, blackbird, and raccoon[1,2].

Black-crowned night heron

Class	Chemical of Concern	Middle Ferry Creek		Upper Ferry Creek		Great Meadows	
		HQ	%HQ of HI	HQ	%HQ of HI	HQ	%HQ of HI
Inorganics	Arsenic	0.03	0.08%	0.03	0.22%	0.04	0.84%
	Cadmium	0.10	0.23%	0.09	0.64%	6.42E-03	0.14%
	Chromium	1.76	4.14%	2.79	20.02%	0.81	18.25%
	Copper	2.14	5.02%	0.84	5.99%	0.16	3.53%
	Lead	30.13	70.70%	7.33	52.51%	0.32	7.09%
	Mercury	0.24	0.57%	0.36	2.55%	0.21	4.64%
	Nickel	0.02	0.04%	9.63E-03	0.07%	3.71E-03	0.08%
	Silver	6.51E-04	0.00%	1.00E-03	0.01%	5.94E-04	0.01%
	Zinc	1.95	4.58%	1.09	7.84%	0.69	15.48%
Dioxins	2,3,7,8-TCDD	0.04	0.09%	0.04	0.26%	0.02	0.35%
PAHs	Sum PAHs	0.01	0.03%	6.15E-03	0.04%	5.79E-03	0.13%
DDTs	DDT	3.81	8.94%	0.76	5.46%	1.83	41.00%
PCBs	Total Aroclors	2.37	5.55%	0.61	4.34%	0.37	8.32%
	Hazard Index	42.62		13.96		4.46	

Red-winged blackbird

Class	Chemical of Concern	Middle Ferry Creek		Upper Ferry Creek		Great Meadows	
		HQ	%HQ of HI	HQ	%HQ of HI	HQ	%HQ of HI
Inorganics	Arsenic	0.02	0.28%	0.02	0.28%	0.02	0.24%
	Cadmium	0.21	3.87%	0.21	3.87%	0.17	2.59%
	Chromium	0.33	6.21%	0.33	6.21%	0.56	8.55%
	Copper	0.32	5.94%	0.32	5.94%	0.34	5.22%
	Lead	0.35	6.47%	0.35	6.47%	1.13	17.36%
	Mercury	0.20	3.73%	0.20	3.73%	0.15	2.32%
	Nickel	3.74E-03	0.07%	3.74E-03	0.07%	3.24E-03	0.05%
	Silver	1.61E-08	0.00%	1.61E-08	0.00%	1.70E-07	0.00%
	Zinc	2.21	41.01%	2.21	41.01%	2.48	38.07%
Dioxins	2,3,7,8-TCDD	0.06	1.06%	0.06	1.06%	0.04	0.54%
PAHs	Sum PAHs	3.20E-03	0.06%	3.20E-03	0.06%	3.40E-03	0.05%
DDTs	DDT	1.38	25.59%	1.38	25.59%	1.38	21.18%
PCBs	Total Aroclors	0.31	5.71%	0.31	5.71%	0.25	3.84%
	Hazard Index	5.39		5.39		6.51	

Raccoon

Class	Chemical of Concern	Middle Ferry Creek		Upper Ferry Creek		Great Meadows	
		HQ	%HQ of HI	HQ	%HQ of HI	HQ	%HQ of HI
Inorganics	Arsenic	1.01	3.97%	0.82	9.72%	1.17	47.67%
	Cadmium	0.19	0.76%	0.18	2.09%	0.04	1.79%
	Chromium	0.66	2.58%	1.14	13.50%	0.21	8.66%
	Copper	7.56	29.59%	2.71	32.02%	0.44	18.03%
	Lead	11.54	45.16%	2.50	29.56%	0.14	5.56%
	Mercury	0.28	1.08%	0.45	5.31%	0.21	8.50%
	Nickel	0.05	0.19%	0.02	0.25%	7.45E-03	0.30%
	Silver	3.45E-04	0.00%	7.20E-04	0.01%	1.63E-04	0.01%
	Zinc	0.15	0.58%	0.06	0.65%	0.04	1.45%
Dioxins	2,3,7,8-TCDD	3.84E-04	0.00%	3.28E-04	0.00%	1.76E-04	0.01%
PAHs	Sum PAHs	0.09	0.35%	0.06	0.66%	0.10	3.95%
DDTs	DDT	1.89E-04	0.00%	1.07E-04	0.00%	1.14E-04	0.00%
PCBs	Total Aroclors	4.03	15.75%	0.53	6.21%	0.10	4.06%
	Hazard Index	25.55		8.47		2.46	

1 - Hazard Quotients and Hazard Indices are found in Tables 3-3, 3-6, and 3-8.

2 - % HQ of HI = HQ/HI.